ETAS ES132.1

Interface Extension Module

User Guide

www.etas.com

ES132.1 I User Guide R03 EN I 04.2026

Contents

1 Introduction

1.1 About ES132.1 - Interface Extension Module

The ES132.1 Interface Extension Module is equipped with two CAN / CAN FD interfaces for connection to the CAN bus of a vehicle or an ECU and with a Lemo interface.

1.1.1 Scope of application

The ES132.1 can be used for the following tasks:

- Recording and capturing communication data and calibration of ECUs via the CAN bus interface
- ECU diagnostics via the CAN bus interface and J2534 pass-through interface
- Vehicle diagnostics and reprogramming via a J2534 pass-through interface using application software from third-party providers
- Flash programming of ECUs

1.1.2 Properties

The most important properties at a glance:

- Two independent CAN/CAN FD interfaces:
  - CAN high-speed or CAN FD operating mode (SIC)
  - CAN protocols CAN V2.0a (standard identifier with 11 bit) and CAN V2.0b (extended identifier with 29 bit)
  - Support for ISO-compliant CAN FD and non-ISO-compliant CAN FD
  - Multi-client access to the same CAN channel (max. four clients can access the device; two clients per channel)
- Synchronization of the measuring channels with INCA
- DSUB connector in accordance with "CAN in Automation" (CiA)
- No external power supply necessary
- Adaptable to ambient conditions (temperature, EMC)
- High level of mechanical stability and robustness

1.2 Target audience and intended use

Target audience

For the safe and efficient use of the product, the user is expected to have comprehensive expertise and practical experience in the following automotive domains:

- Electrical and electronic system architectures in motor vehicles
- Sensor technology and control engineering
- Bus systems and communication protocols
- Electronic control unit (ECU) development and calibration
- Safety guidelines and regulatory requirements for the development and validation of vehicle systems

Intended use

The product was developed and approved for applications in the automotive sector. Only operate the product as per its specifications. If the product is used in any other way, product safety is no longer ensured.

The interface modules are designed for the following applications:

- Detecting signals from ETK and ECU interfaces, as well as from vehicle buses
- Flash programming of ECUs

Application areas

- The product is approved for use in the following areas:
  - Interior
  - Passenger compartment
  - Trunk
- Do not operate the product in a wet or damp environment.
- Do not operate the product in potentially explosive atmospheres.

Technical condition

The product is designed in accordance with state-of-the-art technology. Only operate the product and its accessories if they are in perfect working order. Shut down a damaged product immediately. Do not open or alter the product. Only ETAS may make changes to the product.

1.3 Safety instructions and classification

Refer to the following safety instructions and the technical documentation available to download from the ETAS website www.etas.com. Keep the information provided in a safe place.

Failure to comply with the safety instructions may lead to the risk of damage to life and limb or property. The ETAS Group and its representatives shall not be liable for any damage or injury caused by improper operation or use of the product.

Only use the product if you have read and understood the information concerning safe operation and have the required qualifications and training for this product. If you have questions about safe operation, contact ETAS:

- Technical Support: www.etas.com/hotlines
- Regional ETAS Contact Partner: www.etas.com/contact

The product is only approved for the applications described in the technical documentation. When using and operating this product, all applicable regulations and laws must be observed.

ETAS products, made available as beta versions or prototypes of firmware, hardware and/or software, are to be used exclusively for testing and evaluation purposes. These products may not have sufficient technical documentation and not fulfill all requirements regarding quality and accuracy for market-released series products. The product performance may therefore differ from the product description. Only use the product under controlled testing and evaluation conditions. Do not use data and results from beta versions without prior and separate verification and validation and do not share them with third parties.

Before commissioning, check whether a Known Issue Report (KIR) is available for the current product version: www.etas.com/kir (Password: KETASIR). Note the information given in the report.

Program codes or program control sequences that are created or changed via ETAS products, as well as all types of data obtained through the use of ETAS products, must be checked for their reliability and suitability prior to use or distribution. Only use these codes or sequences in public areas (e.g. in road traffic) if you have ensured that the application and product settings are safe through testing in self-contained and designated testing environments and circuits.

This ETAS product allows you to influence safety-relevant systems or data (e.g. in motor vehicles, vehicle components and test benches). In the event of a malfunction or a hazardous situation, it must be possible to put the system into a safe state (e.g. emergency stop or emergency operation).

1.3.1 Classification of Safety Messages

Safety messages warn of dangers that can lead to personal injury or damage to property:

DANGER

DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE indicates a situation that, if not avoided, could result in damage to physical property.

ATTENTION

ATTENTION indicates a situation that, if not avoided, could result in damage to digital property like data loss, data corruption and system vulnerability.

1.3.2 Assembly

Only install, connect, disconnect and cable ETAS products and components when they are de-energized.

1.3.2.1 Assembly location

CAUTION

Class A product

This product is not intended for use in residential environments and might not provide adequate protection to radio reception in such environments.

NOTICE

Damage to the electronics due to potential equalization

The cables' shield may be connected to the housing, the ground or the ground for the product's power supply. If there are different ground potentials in the test setup, equalizing currents can flow between the products via the cables' shield.
Take account of different electric potentials in your test setup and take appropriate measures to prevent equalizing currents.

1.3.2.2 Securing the product

The housing must not be damaged while securing the product.

WARNING

Risk of injury due to inadequate fastening

- Secure the product so that it does not move uncontrollably.
- Only use carrier systems and fastening materials that can accommodate the static and dynamic forces of the product and are suitable for the ambient conditions.

1.3.2.3 Ventilation

- Protect the product against direct solar radiation and other sources of heat.
- Ensure that there is sufficient air circulation for efficient heat exchange.

1.3.3 Operation

Only operate the product with the latest firmware. You can find information about updating the firmware in the chapter "Firmware and software update".

If the firmware update is not completed successfully, try it again. If a new firmware update is not possible and the product is not functional, send the product to ETAS.

WARNING

Risk due to undefined vehicle behavior during an ECU reset

If you operate the product in combination with ETKs, the ECU must not be reset in an uncontrolled manner.

- Only make changes when the vehicle is stationary (e.g. changes to the test setup, changes to the ETK configuration, software updates).

1.3.4 Electrical connection

WARNING

If an unsuitable power supply is used, this may generate a hazardous electrical voltage.

- Use a power supply that is permitted for the product.
- Do not connect the product to power outlets.
- To prevent inadvertent connection to power outlets, use power cords with safety banana plugs in areas with power outlets.

Electrical safety and power supply

- Only connect the product to electric circuits with safety extra-low voltage in accordance with IEC 61140 (devices of class III) within the voltage limits for accessible parts as per IEC 61010-1.
- Observe the connection and setting values.
- The power supply for the product must be safely disconnected from the supply voltage. For example, use a car battery or a suitable lab power supply.

- Only use lab power supplies with dual protection for the supply network (with double/reinforced insulation (DI/RI)).
- The power supply must be suitable for use according to the ambient conditions for the product.
- It is possible to discharge the vehicle battery in regular operation and long standby operation.
- Central load-dump protection is required for operation.

Connection to the power supply

The product is powered via an ETAS module in the test setup.

To de-energize the product

1. Disconnect the product from the power supply in one of the following ways:
- Switch off the laboratory power supply for the test setup.
- Disconnect the test setup's connection to the vehicle battery.
- Disconnect the product from the ETAS module supplying the power.
2. Disconnect the product from all interfaces.

1.3.5 Cables and accessories

Cables

- Only use ETAS cables, cables recommended by ETAS or other cables certified for the application.
- Route the cables such that they are protected against abrasion, damage, deformation and kinking.
- Do not place any objects on the cables.
- Do not use any damaged cables.
- The connector and connection must not be dirty.
- The connector and connection must be compatible.
- Correctly align the connector with the connection.
- Do not connect the connector and connection by force.

Accessories

Use ETAS accessories, accessories recommended by ETAS or other accessories certified for the application.

1.4 Unpacking

1. Prepare workspace

   Unpack in a clean, dry, well-lit area with enough space for the equipment and avoid static damage or physical harm.

2. Open package

   Use appropriate tools to carefully open the box without damaging the contents.

3. Verify contents

   Compare the items with the packing list "Contents of Package" to ensure all components are present.

4. Inspect for damage

   Visually check each item for physical damage. If found, document and report it on www.etas.com/hotlines.

2 Product overview

2.1 Graphical overview of elements

Fig.	Connection	Description
1	LEMO 1B	Combined connection for power supply and 10/100 BASE-T Ethernet (IEEE 802.3) via connected ETAS module (e.g. ES5xx and ES8xx)
2	DSUB	Two independent CAN channels with separate CAN / CAN FD controllers

2.2 Compatibility

2.2.1 System requirements

For the configuration of the product as well as the control and data acquisition, you need ETAS software in the following versions:

INCA	starting with Version 7.4.4
HSP	starting with Version 13.4.1

2.2.2 Compatible products

The Interface Extension Module ES132.1 can be connected to the following ETAS modules:

- ES523.1
- ES592.1
- ES593-D
- ES595.1
- ES600.2
- ES88x
- ES89x

3 Hardware setup

3.1 Transportation and packaging

Transport

- Only transport the product individually.
- Remove all connected cables before transportation.
- Do not transport the product by the connected cables.

3.2 Mounting and placement

WARNING

Risk of injury due to inadequate fastening

- Secure the product so that it does not move uncontrollably.
- Only use carrier systems and fastening materials that can accommodate the static and dynamic forces of the product and are suitable for the ambient conditions.

CAUTION

Class A product

This product is not intended for use in residential environments and might not provide adequate protection to radio reception in such environments.

3.3 Connection to the power supply

WARNING

If an unsuitable power supply is used, this may generate a hazardous electrical voltage.

- Use a power supply that is permitted for the product.
- Do not connect the product to power outlets.
- To prevent inadvertent connection to power outlets, use power cords with safety banana plugs in areas with power outlets.

The ES132.1 is powered by a connected ETAS product.

3.4 Connection with other products

NOTICE

Damage to the electronics due to potential equalization

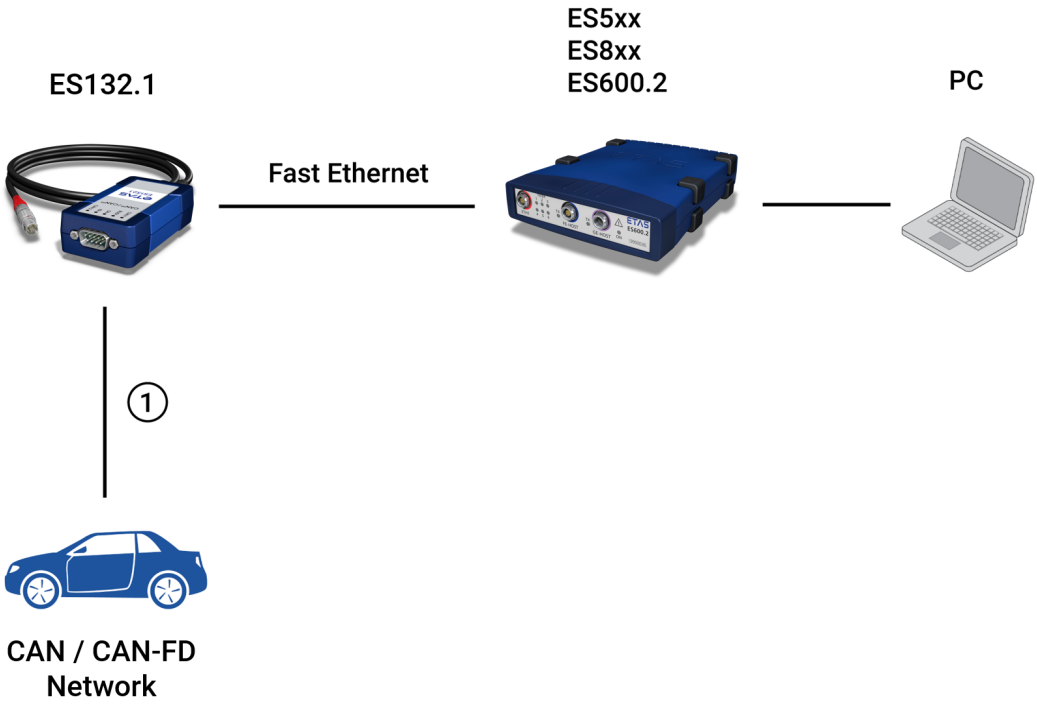
The cables' shield may be connected to the housing, the ground or the ground for the product's power supply. If there are different ground potentials in the test setup, equalizing currents can flow between the products via the cables' shield.
Take account of different electric potentials in your test setup and take appropriate measures to prevent equalizing currents.

Note

Ensure that the test setup is EMC-compliant. A test setup that uses shielded and unshielded components at the same time can lead to impairment of the signal quality and is not recommended by ETAS.

Note

Please ensure that the device is installed and operated as described in the user manual to maintain the specified EMC properties in the respective application. Deviation from the specified installation and operation instructions or connecting the device with other devices may result in a deviation from the specified EMC properties.



Cables in Fig.	Function	Short name
1	Connection to CAN / CAN-FD network	CBCF100.1-0m3
		CBH500-2
		CBCX131-0
		CBAC180.0-2

4 Basic operation

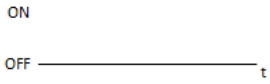
4.1 Status indicator

The ES132.1 is equipped with LEDs for displaying the module's operating state, as well as for displaying the function of the two CAN connections CAN 1 and CAN 2.

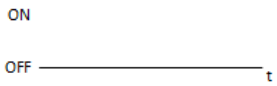
CAN 1

LED code	Display	State
	Off	Communication at the CAN1 interface interrupted
	Flashing yellow	Communication at the CAN1 interface

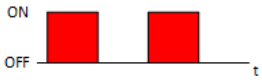
BUSY

LED code	Display	State
	Off	No synchronization
	Flashing blue	The module is synchronized

ON

LED code	Display	State
	Off	The module is switched off.
	Flashing green	The module is on standby.
	Lit green	The module is switched on.

ER

LED code	Display	State
	Off	No error
	Flashing red	Firmware update is being performed. Do not disconnect the power supply.
	Lit red	Boot process failed or software error. Restart the module.

CAN 2

LED code	Display	State
	Off	Communication at the CAN 2 interface interrupted
	Flashing yellow	Communication at the CAN2 interface

5 Overview of functions

5.1 CAN FD interface

The Interface Extension Module ES132.1 has two CAN interfaces (CAN1 and CAN2) at the nine-pin D-SUB connection and a LEMO connection with a standard Ethernet interface (10/100 Mbit/s in accordance with IEEE 802.3) and an integrated power supply via the connected ETAS module. The two CAN interfaces are independent CAN channels with separate CAN FD controllers.

5.1.1 Operating modes

The CAN1 and CAN2 interfaces can be configured independently of one another in the application software for the following operating modes:

- CAN
- ISO-compliant CAN FD
- Non-ISO-compliant CAN FD

5.1.2 Bus terminating resistor

According to the CAN specification, one bus terminating resistor of 120 ohms is required at each of the two open ends of the bus. It must be connected to the cable or the plug. Some CAN networks are already terminated (for example in a vehicle), so no additional termination is required. ETAS offers cables and terminating resistors of 120 ohms to set up CAN networks.

5.1.3 Minimum requirements for the CAN connection

At least the following connections are required in order to establish a connection to the CAN network:

- Pin 2 CAN Low
- Pin 7 CAN High
- Pin 6 or Pin 3 GND (either one of the pins can be connected)

The ground connection (GND) must be identical to the ground connection of the other CAN nodes on the bus.

6 Commissioning

WARNING

Risk due to undefined vehicle behavior during an ECU reset

If you operate the product in combination with ETKs, the ECU must not be reset in an uncontrolled manner.

– Only make changes when the vehicle is stationary (e.g. changes to the test setup, changes to the ETK configuration, software updates).

7 Technical specification

7.1 Hardware specifications

7.1.1 Ambient conditions

Operating temperature range	-40°C to +60 °C -40°F to +140 °F
Storage temperature range (without packaging)	-40°C to +85°C -40°F to +185°F
Max. relative humidity (non-condensing)	95%
Max. altitude	5000 m / 16400 ft.
Degree of contamination (IEC 60664-1, IEC 61010-1)	2
Protection rating (IEC 60529) (when closed)	IP42

7.1.2 Electrical data

Operating voltage range	6 V to 32 V DC
Max. current consumption	0.5 A
Typical current consumption (standby)	approx. 0.5 mA (at 12 V DC)
Maximum voltage to ground or to all accessible parts (e.g. ECU housing, vehicle chassis)	60 V DC / 30 V AC
Overvoltage category (mains supply, IEC 60664-1)	II

7.1.3 Mechanical data

Dimensions (H x W x D)	92 x 48 x 24 mm 3.62 x 1.89 x 0.95 in
Dimensions (H x W x D) with cable	1592 x 48 x 24 mm 62.68 x 1.89 x 0.95 in
Weight	0.18 kg / 0.4 lb

7.2 Interface specifications

7.2.1 CAN interface

CAN	Two independent interfaces, galvanically isolated from each other and the other interfaces, each channel can be configured separately
Default	ISO11898-1:2015, ISO15765-4, ISO11898-2:2016, CiA601-4 v2.0.0
Protocols	CAN FD (ISO11898-1:2015, Bosch CAN FD specification V1.0 [non-ISO])
Transmission speed	CAN 1 Mbit/s (ISO11898-2:2016) CAN FD 5 Mbit/s (ISO11898-2:2016) CAN FD 8 Mbit/s (CiA601-4 v2.0.0)
Controller	Bosch M_CAN
Transceiver (physical layer)	TJA1462 (max. 8 Mbit/s)
Differential internal resistance Ri	10 kOhm

Note

The CAN/CAN FD network topology may affect the maximum transmission speed.

7.3 Product markings

Symbol	Description
	Please read the user manual before starting up the product.
SN: xxxxxxx	Serial number
F 00K xxxxxxx	Order number

Symbol	Description
x-xx V ⎓	Operating voltage range DC
xxx mA	Max. current consumption
	**China RoHS** With the China RoHS identification attached to the product or its packaging, ETAS confirms that the product meets the guidelines of the “China RoHS” (Management Methods for Controlling Pollution Caused by Electronic Information Products Regulation) applicable in the People's Republic of China.
	**CE conformity** With the CE mark attached to the product or its packaging, ETAS confirms that the product corresponds to the applicable, product-specific Directives of the European Union. The EU Declaration of Conformity for the product is available upon request. **European Union** The EU Directive 2011/65/EU limits the use of certain dangerous materials for electric and electronic devices (RoHS conformity). This product does not contain any of the prohibited substances listed in EU Directive 2011/65/EU and does not exceed the maximum authorized concentrations specified. There are currently no equivalent alternative substances for individual electronic components used in our products. We are therefore making use of exemptions 7.a-I, 7.c-I and 6.c (for accessory cables) in Annex III of this Directive. ETAS confirms that the product meets this directive applicable in the European Union.
	**KCC conformity** With the KC mark attached to the product or its packaging, ETAS confirms that the product has been registered in accordance with the applicable, product-specific KCC guidelines of the Republic of Korea.

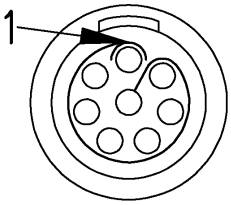
Symbol	Description
	CMIM conformity With the CMIM mark attached to the product or its packaging, ETAS confirms that the product corresponds to the product-specific, applicable directives of the Kingdom of Morocco. The CMIM Declaration of Conformity for the product is available upon request.
UK CA	**UKCA conformity** With the UKCA mark attached to the product or its packaging, ETAS confirms that the product meets the applicable, product-specific British standards and directives. The UKCA Declaration of Conformity for the product is available upon request.
CAN ICES / NMB	**CAN ICES conformity** This product complies with the Canadian standard: CAN ICES-003(*) / NMB-003(*) * The applicable class of the device is labeled on the product.
	Product return and recycling The European Union (EU) released the Directive for Waste Electrical and Electronic Equipment - WEEE to ensure the setup of systems for collecting, treating and recycling electronic waste in all countries of the EU. This ensures that the devices are recycled in a resource-friendly way that does not represent any risk to personal health and the environment. The WEEE symbol on the product or its packaging identifies that the product may not be disposed of together with the remaining trash. The user is obligated to separately collect old devices and provide them to the WEEE return system for recycling. The WEEE Directive applies to all ETAS devices, but not to external cables or batteries. Additional information about the recycling program of ETAS GmbH is available from www.etas.com/hotlines.

7.4 Connectors

> **Note**
>
> All connections are shown with view of the module interfaces.

7.4.1 Terminal assignment of cables

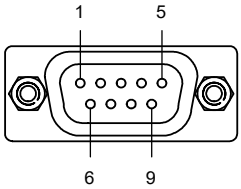
LEMO connector (male)



Pin	Signal
1	UBATTP1
2	UBATTP2
3	UBATTM
4	RX_D2+
5	TX_D1-
6	RX_D2-
7	UBATTM
8	TX_D1+
Housing	GND

7.4.2 Terminal assignment of sockets

DSUB Socket (male)



Pin	Signal
1	NC
2	CAN 1 Low
3	GND
4	CAN 2 Low
5	NC
6	GND
7	CAN 1 High
8	CAN 2 High
9	NC

8 Maintenance

8.1 Cleaning

- Only clean the product when it is de-energized.
- Do not use cleaning agents that could harm the product.
- Do not apply cleaning agents directly onto the product.
- Use a dry or slightly dampened, soft, lint-free cloth.
- Make sure that no moisture enters the product.

8.2 Firmware and software update

8.2.1 Updating the Firmware

The firmware for the product can be updated using the ETAS "Hardware Service Pack" (HSP) service software. You can find the software in the Download Center on the ETAS website: www.etas.com/HSP

8.3 Repair service

If repairs are required, send the product to ETAS.

9 Return form

You can find the return form and information about this process on the ETAS website:www.etas.com/en/support/hw_return_form.php.

10 Accessories and order information

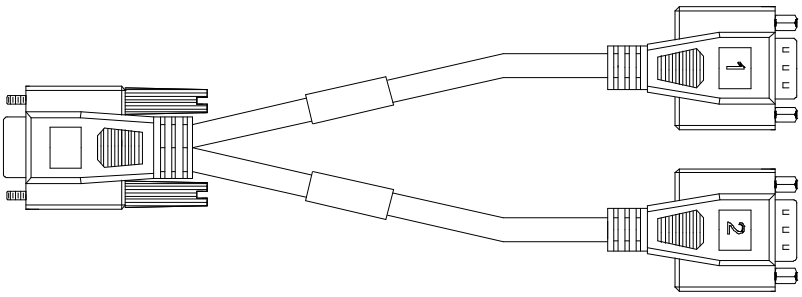
10.1 Module

Order name	Short name	Order number
ES132.1 CAN FD (2 x CAN FD) interface extension module with LEMO 1B FGC (8mc) Ethernet connection	ES132.1	F 00K 112 341

10.2 Cables

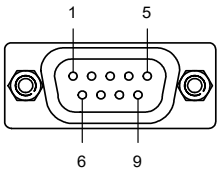
10.2.1 Data cables

10.2.1.1 CBCF100 Cable



Y-cable for connecting a second CAN channel

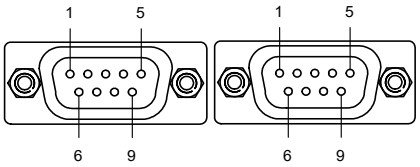
DSUB connection (female)



Pin	Signal
1	Not connected
2	CAN1 low
3	Ground
4	CAN2 low

Pin	Signal
5	Shield
6	Ground
7	CAN1 high
8	CAN2 high
9	Not used

DSUB connection (male)



Pin	DSUB connection "1"	DSUB connection "2"
1	Not connected	Not connected
2	CAN1 low	CAN2 low
3	Ground	Ground
4	Not connected	Not connected
5	Shield	Shield
6	Ground	Ground
7	CAN1 high	CAN2 high
8	Not connected	Not connected
9	Not used+	Not used

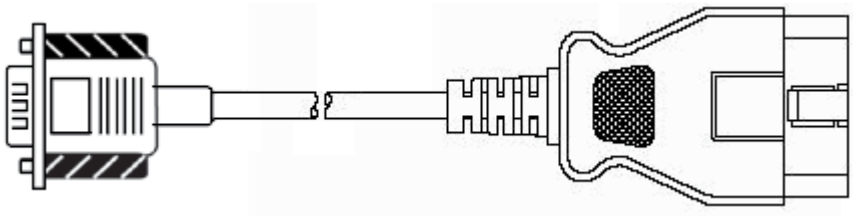
Order name	Short name	Order number
CAN and FlexRay interface Y-cable, DSUB – 2 x DSUB (9fc-9mc+9mc), 0m3	CBCF100.1-0m3	F 00K 107 939

10.2.1.2 CBH500 Cable

> **Note**
>
> The CBH500 cable only supports one CAN channel.

Order name	Short name	Order number
CAN, LIN and FlexRay interface cable, DSUB-DSUB (9fc - 9mc + 9fc), 2 m	CBH500-2	F 00K 106 276

10.2.1.3 CBAC180

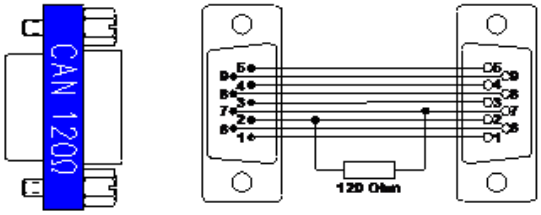


OBDII (J1962) adapter cable for the CAN Interfaces of ES132.1.

DSUB connection	OBD2 connection	Signal
Pin	Pin	
7	6	CAN1 High
2	2	CAN1 Low
8	3	CAN2 High
4	4	CAN2 Low
9	5	Power V+
3	6	GND

10.3 Plugs

10.3.1 CBCX131.1-0 adapter



The CBCX131.1-0 adapter is a CAN 120 ohm terminating resistor with 2xDSUB (9fc+9mc).

Order name	Order number
CBCX131.1-0	F 00K 103 786

Note

The CBCX131.1-0 terminating resistor terminates only one of the two CAN channels. If you connect the CBCX131.1-0 terminating resistor directly to the ES132.1 the second CAN channel is not terminated.

11 Contact information

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:

www.etas.com/hotlines

ETAS offers trainings for its products:

www.etas.com/academy

ETAS headquarters

ETAS GmbH		
Borsigstraße 24	Phone:	+49 711 3423-0
70469 Stuttgart	Fax:	+49 711 3423-2106
Germany	Internet:	www.etas.com

12 Legal information

12.1 Use of Open Source Software

The product might use Open Source Software (OSS). This software is installed on the product at shipment and does not need to be installed or updated by the user. If OSS is used, see the accompanying "OSS Attributions Document" for more information.

12.2 Certification and conformity

12.2.1 Declarable substances

European Union

Some products from ETAS GmbH (e.g. modules, boards, cables) use components with materials that are subject to declaration in accordance with the REACH regulation (EC) no.1907/2006. The REACH Declaration is available online at www.etas.com/reach and is continuously updated.

12.3 Standards and norms

The ES132.1 complies with the following standards and norms:

Standards	Title	Further information
IEC 61010-1:2010, IEC 61010-1:2010/AMD1:2016	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements	
IEC 61326-1:2020	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements	Electromagnetic environment: Industrial
CISPR 11:2015,CISPR 11:2015/AMD1:2016, CISPR 11:2015/AMD2:2019	Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement	Class of the equipment: Class A Group of the equipment: 1

12.3.1 EMC Class A

Republic of Korea

이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.
This equipment is in Class A suitable for professional use and is for use in electromagnetic environments outside of the home.

USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Responsible Party – U.S. Contact Information
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