

ETAS BR_XETK-S4.0

Emulator Probe for STM STELLAR
SR6 MCU Family



User Guide

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1 Safety Information

This chapter contains information about the following topics:

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- Classification of Safety Messages 8
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- Taking the Product Back and Recycling 12
- Declaration of Conformity 12
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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
- ETAS contact partners by region: 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 starting up the product, check whether there is a Known Issue Report (KIR) for that 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).

1.1 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.

An emulator probe (ETK) is an electronic assembly that is installed in a vehicle control unit (ECU) to exchange data with ECUs.

Application Areas

- The product is approved for use in the following areas:
 - ECUs
- 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. The product cannot be repaired. Dispose of the product properly. Do not open or alter the product. Only ETAS may make changes to the product.

1.2 Classification of Safety Messages

The safety messages used here 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 property.

1.3 Safety Information

1.3.1 Assembly

The product must only be removed from the ESD packaging and installed in a workplace that is protected against static discharges.

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

When installing the product, make sure that the fastening elements do not damage the product's printed circuit board or cause a short circuit.

Installation Location

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 Operation

Only operate the product with the latest firmware. You can find information about updating the firmware in the user guide.

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.

1.3.3 Electrical Connection

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.
- Comply with the connection and setting values (see "Technical Data" on page 38).
- The power supply for the product must be safely disconnected from the mains power. 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



DANGER

Undefined vehicle behavior due to an ECU reset

If the external power supply to the ETK is interrupted (e.g. cut, disconnected, etc.), this may lead to the ECU being reset.

- Connect the internal power supply of the ECU to the ETK in addition to the external power supply.
- If this is not possible, ensure that the external power supply to the ETK is not interrupted during operation.



WARNING

Risk to life from electric shock

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

- Use a power supply that is permitted for the product.

- Ensure that the connections of the power supply are easily accessible.

De-energizing 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.
 - Remove the power cord.
2. Remove all cables from the product.

1.3.4 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. For detailed information about accessories, see "Cables and Accessories" on page 51.

1.3.5 Transport

- Only transport and store the product in ESD packaging.
- Only transport the product individually.
- Do not transport the product by the connected cables.

1.3.6 Maintenance







The product is maintenance-free.

Cleaning

- Only clean the product when it is de-energized.
- Make sure that no moisture enters the product.
- Carefully vacuum off dust particles and loose foreign bodies.

1.4 Identifications on the Product

The following symbols are used for identifications of the product:

Symbol	Description
	The User Guide must be read prior to the startup of the product!
	Symbol for WEEE, see chapter 1.5 on page 11
	Symbol for CE conformity, see chapter 1.6.1 on page 12
	UKCA conformity symbol (Great Britain), see chapter 1.6.2 on page 12
	Symbol for China RoHS, see chapter 1.7.2 on page 12
	Symbol for electrostatic sensitive components
XETK-S14.0A	Product designation (example)
F 00K 110 722	Order number of the product (example)
SN: yyxxxxx	Serial number (7-digit)
XXXX/YY	Product version
ZZZZ	Year of manufacture
ETAS GmbH,...	Manufacturer's address



NOTE

For symbols and product information one or several adhesive labels can be used.

1.5 Taking the Product Back and Recycling

The European Union has passed a directive called Waste Electrical and Electronic Equipment, or WEEE for short, to ensure that systems are setup throughout the EU for the collection, treating 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 (see Fig. 1-1 on page 12) 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 software, contact the ETAS sales and service locations.

1.6 Declaration of Conformity

1.6.1 CE Declaration of Conformity (European Union)

With the CE mark attached to the product or its packaging, ETAS confirms that the product corresponds to the applicable product-specific European Directives. The CE Declaration of Conformity for the product is available upon request.

1.6.2 UKCA Declaration of Conformity (Great Britain)

With the UKCA mark attached to the product or its packaging, ETAS confirms that the product corresponds to the product-specific, applicable standards and directives of Great Britain. The UKCA declaration of conformity for the product is available on request.

1.7 RoHS Conformity

1.7.1 European Union

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

This product does not contain any of the restricted substances specified in the EU Directive 2011/65/EU or exceeds the maximum concentrations stipulated therein. For individual electronic components used in our products, there are currently no equivalent alternative substances, which is why we make use of the exceptions 7A and 7C-I in Annex III of this Directive.

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

1.7.2 People's Republic of 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.

1.8 Declarable Substances

European Union

Some products from ETAS GmbH (e.g. modules, boards, cables) use components with substances that are subject to declaration in accordance with the REACH regulation (EU) no.1907/2006.

Detailed information is located in the ETAS download center in the customer information "REACH Declaration" (www.etas.com/Reach). This information is continuously being updated.

1.9 Use of Open Source Software

The product uses Open Source Software (OSS). This software is installed in the product at the time of delivery and does not have to be installed or updated by the user. Reference shall be made to the use of the software in order to fulfill OSS licensing terms. Additional information is available in the document "OSS Attributions List" at the ETAS website (www.etas.com).


2 Introduction

This chapter contains information about the following topics:

- Applications..... 14
- Features 15

2.1 Applications

The BR_XETK-S4.0 is an emulator probe for the STMicroelectronics STELLAR SR6 microcontroller family. It is a serial XETK with an Automotive Ethernet (100BASE-T1) interface.

 **NOTE**

For supported STMicroelectronics STELLAR SR6 microcontrollers, refer to chapter 7.1.3 on page 39.

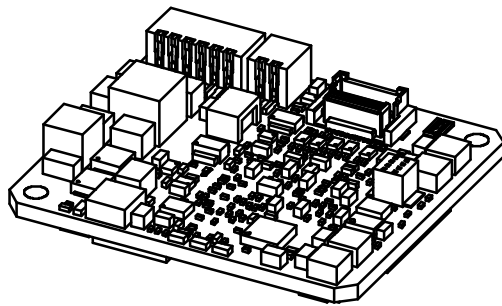


Fig. 2-1 BR_XETK-S4.0

An Automotive Ethernet media converter is required for the access to the BR_X-ETK-S4.0 by the standard full duplex 100Base-T Ethernet of the PC.

To connect the PC with the BR_XETK-S4.0 and the Automotive Ethernet interface, ETAS offers different modules:

- CBEB100.1, ES160.1, ES162.1, and ES165.1 Automotive Ethernet Media Converter
- ES882.1 and ES886.x ECU Interface Module

The BR_XETK-S4.0 can be used for rapid prototyping applications (bypass) as well as for measurement and calibration applications.

	BR_XETK-S4.0
ECU interface connector	20 pin FCI
Power supply connector	6 pin MOLEX
Power supply for ED devices (VDDSTBY)	0.999 V
VDDSTBY sense	Yes, on board
Pinless triggering	Yes
Timer triggering	Yes

2.2 Features

- Measurement interface:
 - Measurement via SWD interface
 - Clock speed up to 70 MHz
 - 3.3 V output levels, 5.0 V tolerant SWD input
 - Pinless startup protocol for XETK recognition and data acquisition triggering
- Calibration:
 - Microcontroller capability of internal Flash emulation can be used
- ECU flashing via XETK
 - Braindead flashing under ProF control
- Permanent storage of configuration in EEPROM
- Automotive Ethernet Interface 100BASE-T1:
 - Connection to PC via Automotive Ethernet to Standard Ethernet Media Converter
 - Open XCP on Ethernet Protocol
 - Supports a variety of standard applications
- “ETK Tools” update to support ETAS software tools (INCA, XCT)
- Firmware update (programming of the logic device) through HSP software service packs; removal of XETK or ECU is not necessary
- Temperature range suitable for automotive application

For more technical data on the BR_XETK-S4.0 consult the chapter “Technical Data” on page 38.

3 Hardware Description

This chapter contains information about the following topics:

- Architecture 16
- ECU Interface 17
- Automotive Ethernet Interface 18
- Power Supply 19
- Status LEDs 20
- SWD Interface 21
- Data Emulation and Data Measurement 22
- Trigger Modes 23
- Reset 24

3.1 Architecture

Fig. 3-1 shows the block diagram of the BR_XETK-S4.0.

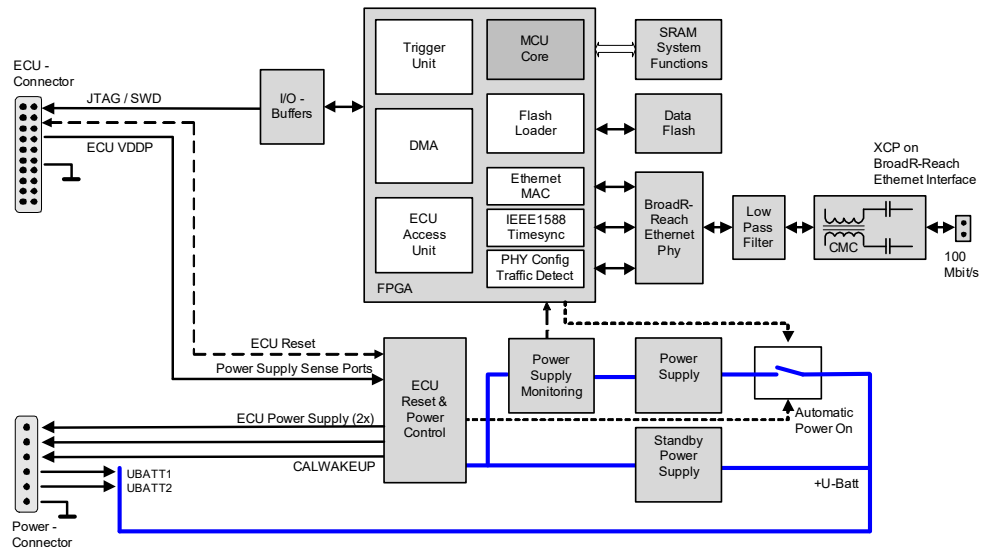


Fig. 3-1 BR_XETK-S4.0 Architecture

While the microcontroller accesses the program data (not the program code) out of the data emulation memory provided by the microcontroller, the content of the data emulation memory can simultaneously be modified by the calibration and development system through the Automotive Ethernet interface. This process enables adjustments of parameters, characteristic lines and maps through the calibration and development system. Using an additional measurement data memory area, the ECU microcontroller can provide data to the calibration and development system by buffering the data (DISTAB17) and triggering the BR_XETK-S4.0 to read the data via SWD. The BR_XETK-S4.0 then reads, buffers, processes and sends this measured data to the PC.

If no additional measurement data memory is available, the BR_XETK-S4.0 can alternatively read the data to be measured directly from the microcontroller's memory. This process is Triggered Direct Measurement (TDM) with DISTAB17.

The 100 Mbit/s XETK Ethernet interface provides communication with the PC.

ETK Connector	Description
CON1	XETK Automotive Ethernet interface
CON2	ECU Interface
CON3	Power supply

3.2 ECU Interface

The BR_XETK-S4.0 is connected via connector CON2 to the ECU with an adapter cable (refer to Fig. 3-2 on page 17). The pin definition depends on the application and the microcontroller type. In general, the ECU interface consists of

- 1 ECU voltage line, which is not used for XETK power supply, but only for detection of the ECU status, therefore the power consumption on this line is negligible (refer to chapter 3.4 on page 19)
- 1 Reset line which allows the XETK to control and monitor the system reset of the ECU
- 1 Reset line which allows the XETK to control and monitor the power-on reset of the ECU
- 5 Debug lines for the communication between the BR_XETK-S4.0 and the microcontroller
- 5 ground lines for proper shielding of the ECU interface lines.

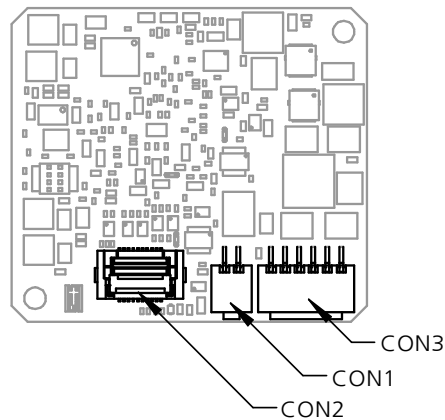


Fig. 3-2 Location of the ECU Interfaces

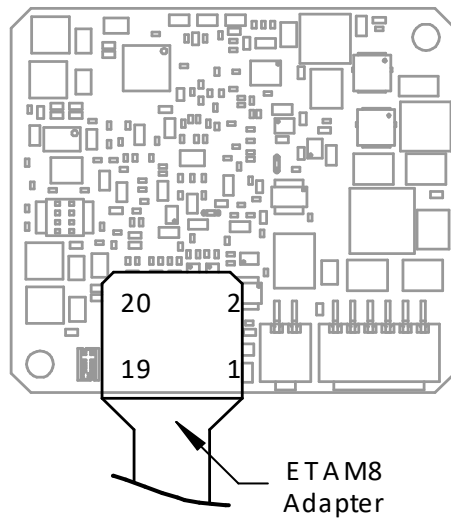


Fig. 3-3 ETAM8 Adapter mounted at CON2

3.3 Automotive Ethernet Interface

The Automotive Ethernet interface (100BASE-T1) of the BR_XETK-S4.0 can not be connected to a PC directly, but a media converter has to be inserted in between.

Its purpose is to transform the physical layers of Automotive Ethernet (1 differential pair / 2 wires) into Standard Ethernet (2 differential pairs/ 4 wires) and vice-versa. The media converter has to be connected to CON1 (refer to Fig. 3-4).

The combination of the BR_XETK-S4.0 and the Automotive Ethernet media converter CBEB100.1 / ES16x.1 or an ES882.1 / ES886.x ECU Interface Module is integrated in the ETAS IP world with automatic IP management and supports the open automotive "Universal Measurement and Calibration" standard "XCP on Ethernet" (TCP/IP, UDP/IP).

The open "XCP on Ethernet" interface allows for connecting to the BR_XETK-S4.0 with third party application software.



NOTE

The Automotive Ethernet interface is not compatible with the standard Ethernet interfaces of ETAS modules. An Automotive Ethernet or an ES88x ECU Interface Module is needed to connect the BR_XETK-S4.0 to the PC.



NOTE

Please see chapter 7.1.2 on page 38 for additional information regarding PC requirements for the Ethernet interface.



NOTE

See chapter "Requirements for failsafe Automotive Ethernet Operation" on page 30 for details on wiring the Automotive Ethernet interface cables.

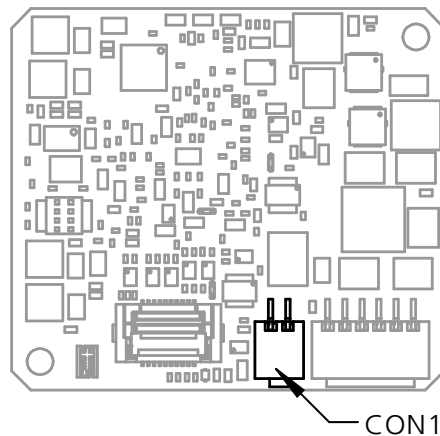


Fig. 3-4 Location of the BR_XETK-S4.0 Ethernet Interface connector (CON1)

3.4 Power Supply

The BR_XETK-S4.0 requires a permanent power supply. It is typically powered directly from the car battery. The input voltage may vary (see chapter 7.6 on page 42). In case of higher input voltages to the XETK, additional voltage protection is required. The BR_XETK-S4.0 will also accept voltage dips down to 3 V (for additional details of low voltage operation, see ISO standard 16750).

From the input battery voltage, switch-mode power supplies provide all necessary voltages on the BR_XETK-S4.0. The power supply of the ECU is not affected by the BR_XETK-S4.0. An automatic switch ensures, that the power consumption of the BR_XETK-S4.0 is reduced to a minimum, when the XETK enters its standby (sleep) mode.

The BR_XETK-S4.0 is supplied with power through the connector CON3.

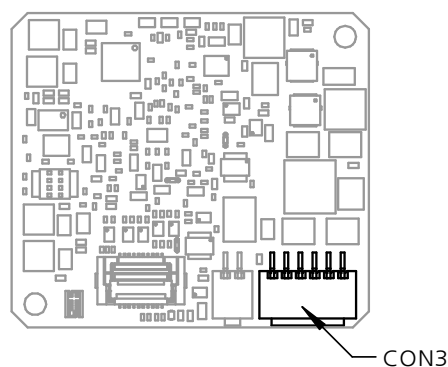


Fig. 3-5 Location of the BR_XETK-S4.0 Power Supply Connector (CON3)

3.5 Status LEDs

There are three LEDs displaying the operating status of the BR_XETK-S4.0 (Fig. 3-6 on page 20).

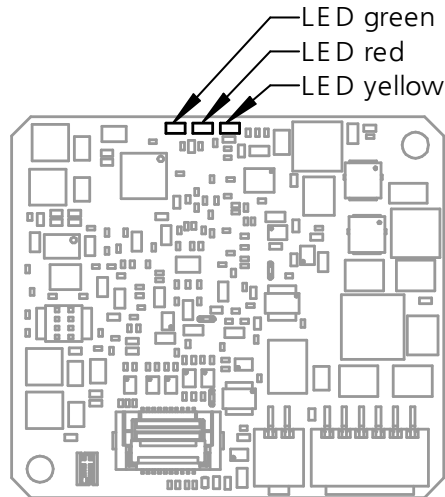


Fig. 3-6 Status LEDs

LED	State	Definition
Red	On	BR_XETK-S4.0 is supplied with power and active (i.e. the ECU is switched on or the ETAS calibration and development system is connected and ready to communicate with the BR_XETK-S4.0)
Green	Off	Working Page contains data and is accessible from INCA
	Flashing	BR_XETK-S4.0 is in boot configuration mode: - measurement and calibration are not possible, - BR_XETK-S4.0 update with HSP is required
	On	Power supply has dropped under selected threshold: - data retention of the calibration data manager in the ECU is no longer ensured - as soon as the BR_XETK-S4.0 switches on again, the ECU switches to the Reference Page. Green LED stays lit until the calibration and development system downloads data into the calibration data memory. Otherwise switching to the Working Page is not possible.
Yellow	Off	BR_XETK-S4.0: no link to calibration system established
	On	100 Mbit/s communication to calibration system established

3.6 SWD Interface

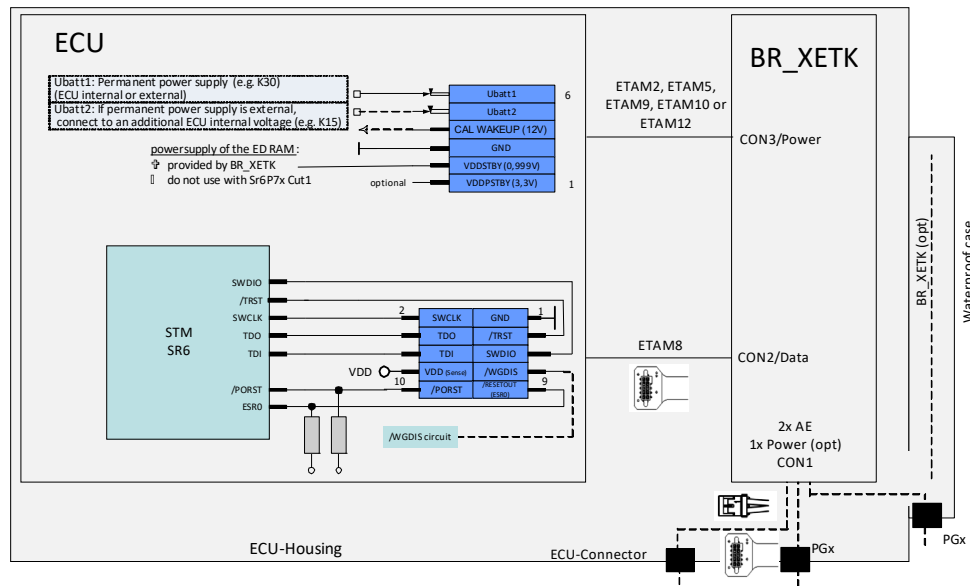


Fig. 3-7 Equivalent Circuitry of the ECU SWD Interface (ECU)

The BR_XETK-S4.0 operates the Single Wire Debug (SWD) interface

The XETK hardware incorporates 22 Ohm series termination resistors for the output ports SWCLK, SWDIO, TDO and /TRST.

Similar termination should be considered on the ECU board - depending both on the layout and on the SWD interface clock rate.

3.7 Data Emulation and Data Measurement

The BR_XETK-S4.0 is a serial XETK using SWD as the primary microcontroller interface. Typical of all serial (X)ETKs, the RAM used for data emulation and data measurement is not accessible by the XETK until the microcontroller is powered up and the startup handshake is performed.

Serial XETKs use the ETAS two-page concept, consisting of both a Reference and a Working page.

The Reference Page is located in the ECU flash and can not be modified by a simple write access. All changes to the Reference Page must be done via Flash programming.

The Working Page is located within the microcontroller's ED RAM. The Working Page may be a portion of or the entire size of the ED RAM. The ED RAM used for the emulation of calibration data must not be used by the ECU software directly as general-purpose RAM. It is recommended that the ED RAM is permanently powered by the XETK or ECU. The XETK/INCA has the complete control over the RAM used as Working Page and its contents. When enabling data emulation, the XETK establishes a basic start-up configuration of the data in the Working Page by copying the corresponding data in the Flash to the emulation space.

To enable calibration, the Working Page must be activated. The process of switching from the Reference Page to the Working Page and vice versa is known as page switching.

The BR_XETK-S4.0 supports Protocol Based page switching for all supported microcontrollers. Page switching is done in microcontroller software by switching the overlay memory on (Working Page) and off (Reference Page) using microcontroller overlay registers. The BR_XETK-S4.0 does not directly control the microcontroller overlay registers. Instead, the BR_XETK-S4.0 and microcontroller software use a simple communication method with a shared mailbox in RAM. The XETK uses this mailbox to request and monitor page switching; the microcontroller software is responsible to service this mailbox and perform the page switches. Using an overlay modification description, also in RAM, the XETK provides the necessary information of how the overlay registers need to be modified to realize the page switch which is requested.

The BR_XETK-S4.0 can access both the Reference Page and the Working Page, regardless of which is active from the microcontroller's point of view.

Another important restriction is that no access to the memory is possible, while the ECU is not running. To enable a cold start measurement in spite of this restriction, the cold start measurement procedure is defined to give the user the feeling of a parallel XETK.

3.8 Trigger Modes

3.8.1 Overview

The BR_XETK-S4.0 supports the following trigger modes:

- Pinless triggering
- Timer triggering

3.8.2 Pinless Triggering

Startup Handshake

The JTAG Data Communication (JDC) register is used to generate process the XETK startup handshake. The ECU must ensure that all memory ECC initialization has been completed prior to the start-up handshake.

For further information on ECC initialization, please refer to the microcontroller's reference manual.

XETK Trigger Generation

To generate triggers, the ECU software sets bits by writing the associated trigger index in the "DTS_SEMAPHORE" register.



NOTE

The selective setting of trigger bits is accomplished in hardware by the microcontroller and does not require a Read-Modify-Write sequence by the ECU software.

Each bit of the "DTS_SEMAPHORE" corresponds to an XETK hardware trigger. Within the XETK's configuration and/or A2L file, bit 0 corresponds to hardware trigger 1 and bit 31 corresponds to hardware trigger 32.



NOTE

Only the index 0 to 31 corresponding to the first 32 triggers are supported by the BR_XETK-S4.0

The XETK periodically polls (reads) "DTS_SEMAPHORE" via JTAG. The polling rate is configurable, with 50 μ s default. The XETK then starts acquisition of appropriate measurement data based on which bits of the register are set.

Active bits in "DTS_SEMAPHORE" are automatically cleared by the microcontroller when the register is read by XETK.

3.8.3 Timer Triggering

The trigger mode "Timer Triggering" uses four internal timers of the BR_XETK-S4.0 for triggering. A fixed configurable period is used for triggering.

The time intervals between trigger events are in accordance with the configured timer values. These values and their resolution must be defined in the A2L file.

Available settings are:

- Minimum time interval 100 μ s
- Maximum period duration 1 s
- Timer resolution 1 μ s

The timers work in an asynchronous manner to the ECU.

3.9 Reset

The requirement for the BR_XETK-S4.0 reset mechanism is to ensure that power-up and power-down behavior of ECU is clean and smooth. The BR_XETK-S4.0 normally drives /PORST low during XETK power up or upon INCA request.

The signals /PORST and /ESR0 of the microcontroller are used by the BR_XETK-S4.0 to detect when the ECU is in reset.

The BR_XETK-S4.0 senses the switched ECU power supply. This allows it to detect when the ECU is off and forward this information to INCA. In addition, it allows the XETK to enter the power save mode with the calibration system unplugged.

4 Installation

This chapter contains information about the following topics:


- Mounting the BR_XETK-S4.0 on the ECU Housing 25
- Connection to the ECU. 29
- Wiring 30

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.

4.1 Mounting the BR_XETK-S4.0 on the ECU Housing


 **NOTE**

For all types of mounting the BR_XETK-S3.0 on the ECU housing, the gap pad has to be used!

4.1.1 How to attach the BR_XETK-S4.0

There are different methods to attach the BR_XETK-S4.0 on the ECU housing:

- Fixing the BR_XETK-S4.0 with mounting bracket
- Fixing the BR_XETK-S4.0 without mounting bracket

 **NOTE**

ETAS recommends to attach the BR_XETK-S4.0 on the ECU housing with mounting bracket.

The mounting bracket is an BR_XETK-S4.0 accessories and can be ordered separately (refer to chapter "Mounting Material" on page 77).

4.1.2 Fixing the BR_XETK-S4.0 with Mounting Bracket

Mounting Material

For mounting the BR_XETK-S4.0 on the ECU housing with mounting bracket following parts are needed:

- Adhesive (recommended adhesive: LOCTITE SI 5145)
- Mounting bracket for fixing on the ECU housing
- Gap pad for the thermal mounting to the ECU housing (including BR_XETK-S4.0 delivery content or as spare part)
- 2 screws M2 x 4, Pan Head ISO 14583

Mounting the BR_XETK-S4.0

Number in figures	Quantity	Order Name	Order Number
1	1	BR_XETK-S4.0 B	F 00K 113 468
or			
		BR_XETK-S4.0 M Emulator Probe for STM STELLAR SR6 MCU Family, including gap pad	F 00K 113 632
2	1	Gap pad as spare part for BR_XETK-S4.0	F 00K 110 752
3	1	Mounting bracket for BR_XETK-S4.0	F 00K 110 753
4	2	Screw M2 x 4, Pan Head ISO 14583	-

Tab. 4-1 List of part numbers used in BR_XETK-S4.0 mounting description figures

To mount the BR_XETK-S4.0 on the ECU Housing



NOTE

Observe the instructions for use provided by the adhesive manufacturer. Treat the bonding area before and hold the drying times.

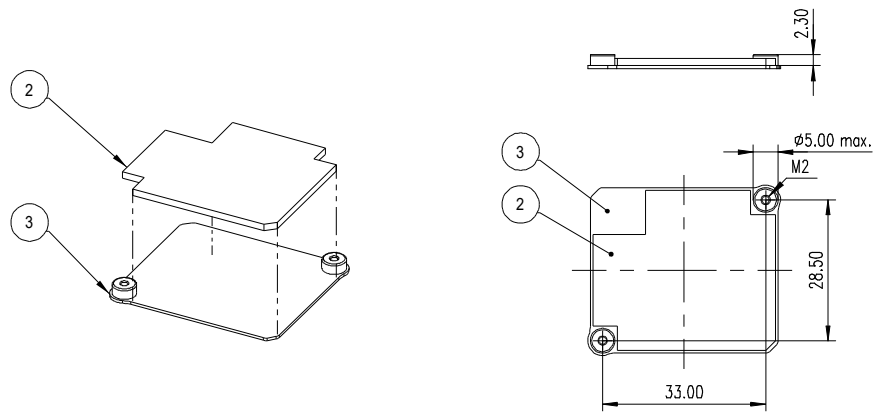
1. Apply the recommended adhesive on the mounting bracket.



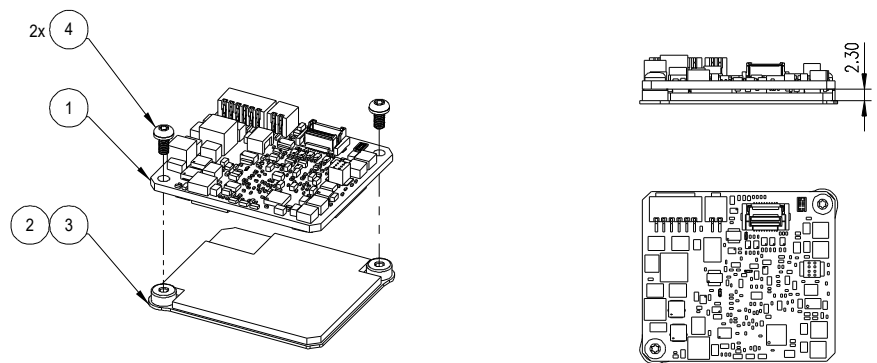
NOTE

We recommend an adhesive layer thickness of max. 0.3 mm.

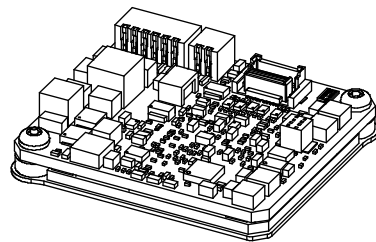
2. Fit the mounting bracket at the intended location of the ECU housing.



3. The adhesive surfaces of the gap pad are protected with foils. Both foils must be removed before using the gap pad.
4. Fit the gap pad on the mounting bracket.
Bring the cutout of the gap pad into line with the ETK connectors.
The gap pad is self-adhesive.



5. Screw the BR_XETK-S4.0 with the ECU housing.



BR_XETK-S4.0 and mounting bracket

4.1.3 Fixing the BR_XETK-S4.0 without Mounting Bracket

This chapter describes an example to mount the BR_XETK-S4.0 without the mounting bracket. Mounting material excluding the gap pad has to be provided by customer for the special use case.

Mounting Material

For mounting the BR_XETK-S4.0 on the ECU housing without mounting bracket following parts are needed:

- Gap pad for the thermal mounting to the ECU housing (including BR_XETK-S4.0 delivery content or as spare part)
- 2 spacers (height = 2.30 mm, external diameter = 5.0 mm, M2 female thread)
- 2 screws M2 x 10, countersunk head
- 2 nuts M2

Mounting the BR_XETK-S4.0

Number	Quantity	Order Name	Order Number
1	1	BR_XETK-S4.0 B	F 00K 113 468
		or	
		BR_XETK-S4.0 M Emulator Probe for STM STELLAR SR6 MCU Family, including gap pad	F 00K 113 632
2	1	Gap pad as spare part for BR_XETK-S4.0	F 00K 110 752

Tab. 4-2 List of part numbers used in BR_XETK-S4.0 mounting description figures

To prepare the ECU Housing

1. Drill two holes through the ECU housing.
Use the measures in figures in chapter 4.1.2 on page 26 and in Fig. 7-6 on page 49.
2. Lower the holes on the outer side of the ECU housing.
3. Insert the screws through the holes in the housing.
4. Screw the screws from the inside of the housing with the spacers.
5. Seal the housing with the holes.

To mount the BR_XETK-S4.0 on the ECU Housing

1. Place the gap pad correctly between the spacers.
2. Set the BR_XETK-S4.0 on the screws.
3. Attach the BR_XETK-S4.0 with nuts M2.

4.2 Connection to the ECU

For connecting the BR_XETK-S4.0 to the ECU two XETK adapter cables are recommended:

- at CON2 adapter ETAM8 and
- at CON3 adapter ETAM2 or ETAM5 or ETAM9 or ETAM10.

The adapter cables are to be ordered separately (refer chapter "Ordering Information" on page 74).

The suitable connectors FCI-20 (CON2) and MOLEX-6 (CON3) should have been populated onto the ECU PCB for adapters ETAM8 and ETAM2/ ETAM5/ ETAM9/ ETAM10 (see Fig. 4-2 for additional connector details).

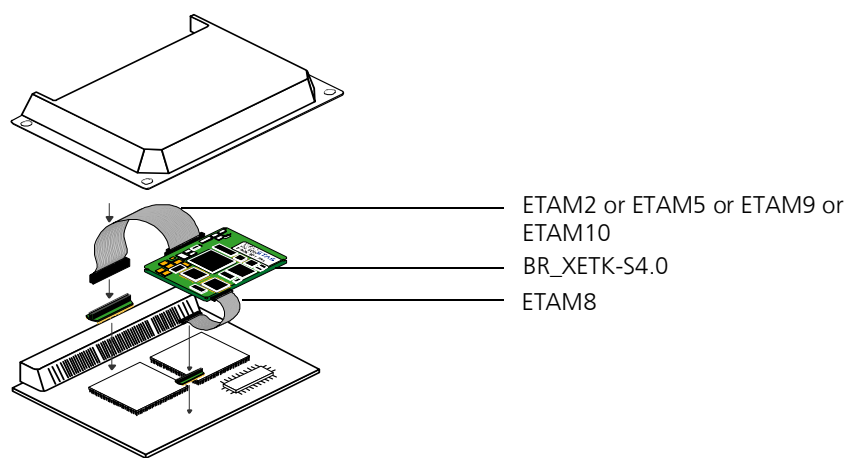


Fig. 4-1 BR_XETK-S4.0 Connection to the ECU

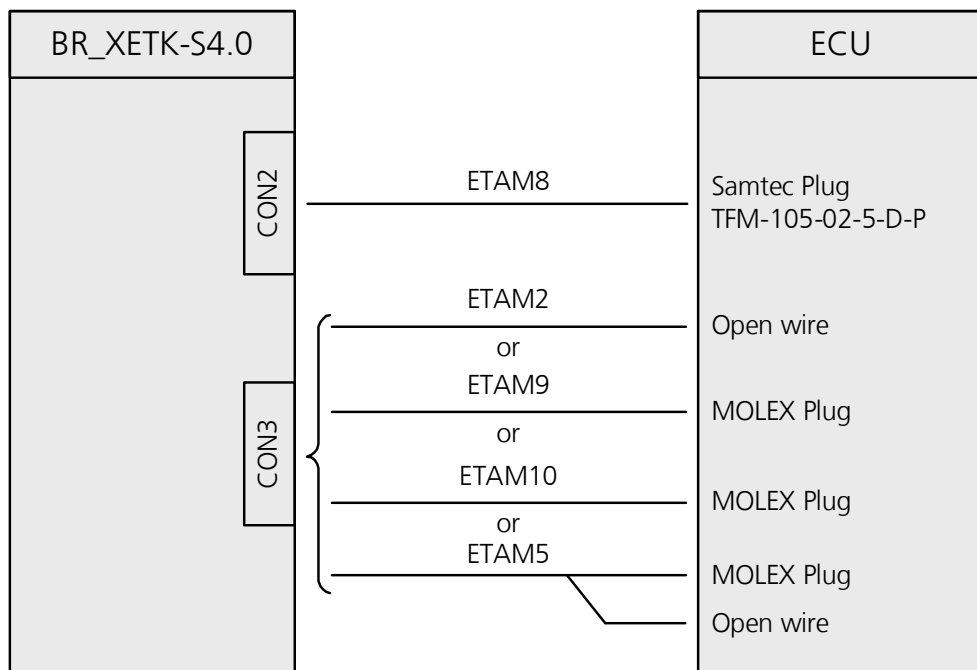


Fig. 4-2 BR_XETK-S4.0 Connection to the ECU

4.3 Wiring

4.3.1 Compatible Hardware



NOTE

The Automotive Ethernet interface is not compatible with the standard Ethernet interfaces of ETAS modules. A Media Converter or an ES88x ECU Interface Module is needed to connect the BR_XETK-S4.0 to the PC.

4.3.2 Requirements for failsafe Automotive Ethernet Operation

For failsafe operation of the Automotive Ethernet communication channel, all customer specific installations - including cables, connectors, and board adaptations - have to be compliant to:

- IEEE Std. 802.3bwTM-2015, "Amendment 1: Physical Layer Specifications and Management Parameters for 100 Mb/s Operation over a Single Balanced Twisted Pair Cable (100BASE-T1)", chapters 96.7 - 96.9
- Open Alliance, "BroadR-Reach® Definitions for Communication Channel, Version 2.0"



NOTE

To achieve an appropriate channel performance all PCB board and cable segments have to be optimized with regard to line impedance matching, length matching within the differential net routing or twisted pair cabling and on the reduction of untwisted regions. Stub segments must be avoided for the Point-to-Point cable connection in favor of inline connectors and shielding measures shall be considered depending on the operation environment.

4.3.3 CBEB100.1 Automotive Ethernet Media Converter

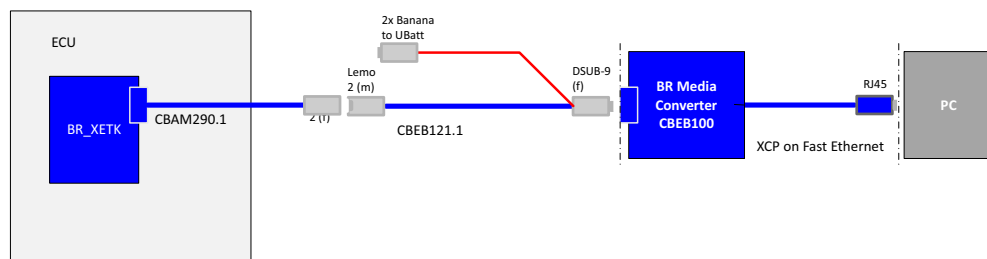


Fig. 4-3 BR_XETK-S4.0 connected with CBEB100.1 Automotive Ethernet Media Converter and ETAS Cable to PC

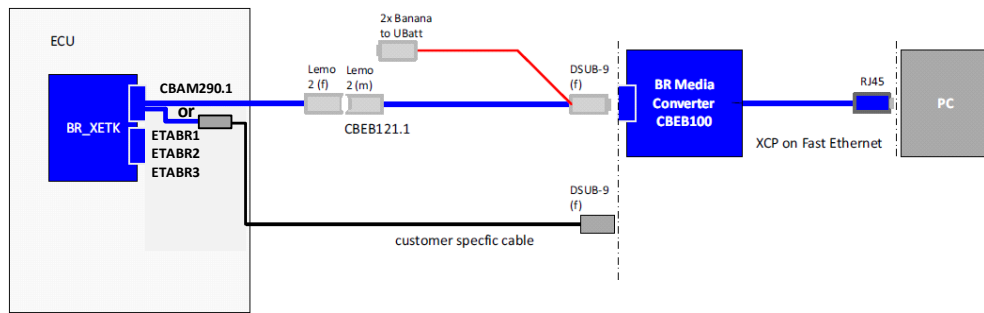


Fig. 4-4 BR_XETK-S4.0 connected with CBEB100.1 Automotive Ethernet Media Converter and Customer specific Cable to PC

4.3.4 ES160.1 Automotive Ethernet Media Converter

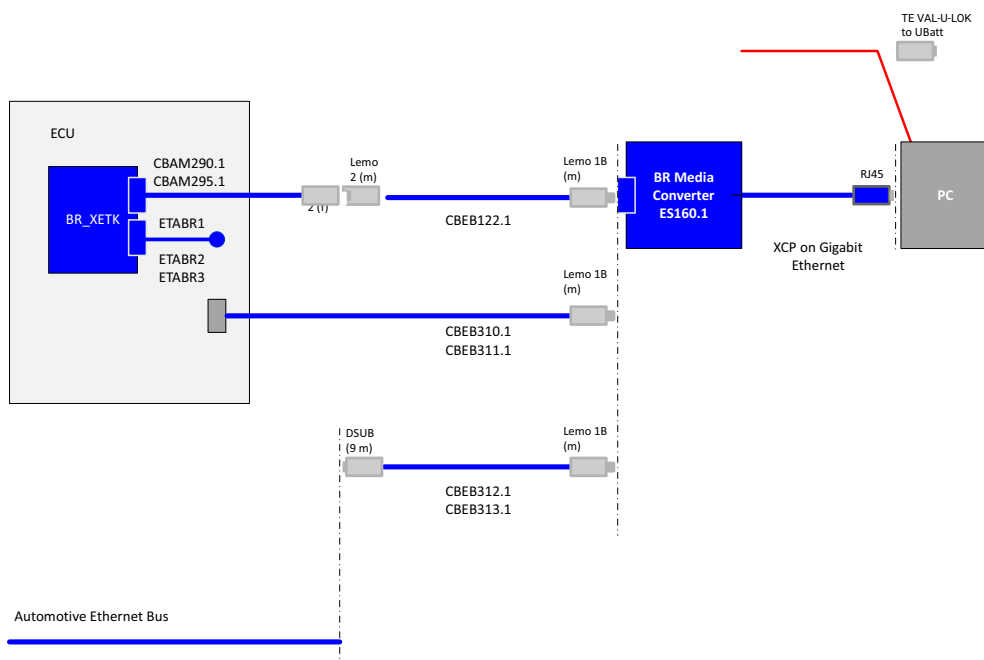


Fig. 4-5 BR_XETK-S4.0 connected with ES160.1 Automotive Ethernet Media Converter via Gigabit Ethernet Interface to PC

4.3.5 ES162.1 Automotive Ethernet Media Converter

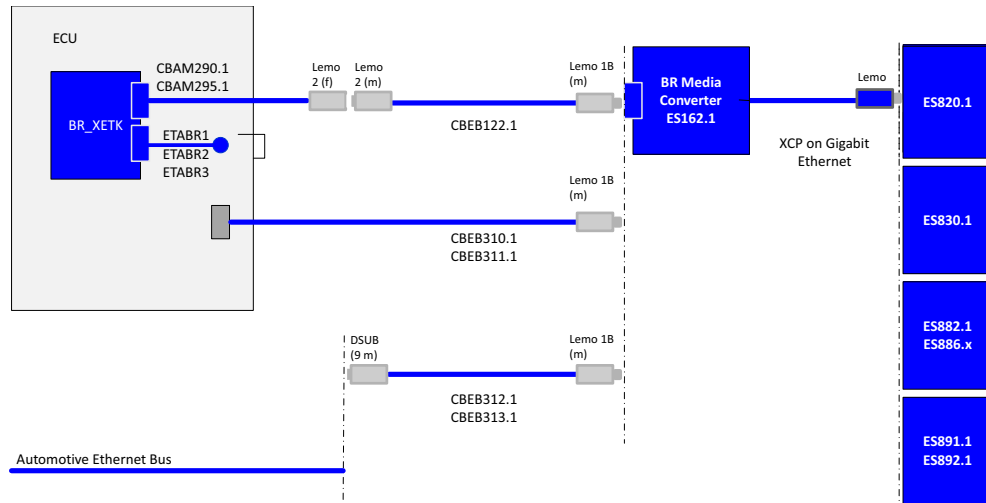


Fig. 4-6 BR_XETK-S4.0 connected with ES162.1 Automotive Ethernet Media Converter via Fast Ethernet Interface to ETAS Modules

4.3.6 ES165.1 Automotive Ethernet Media Converter

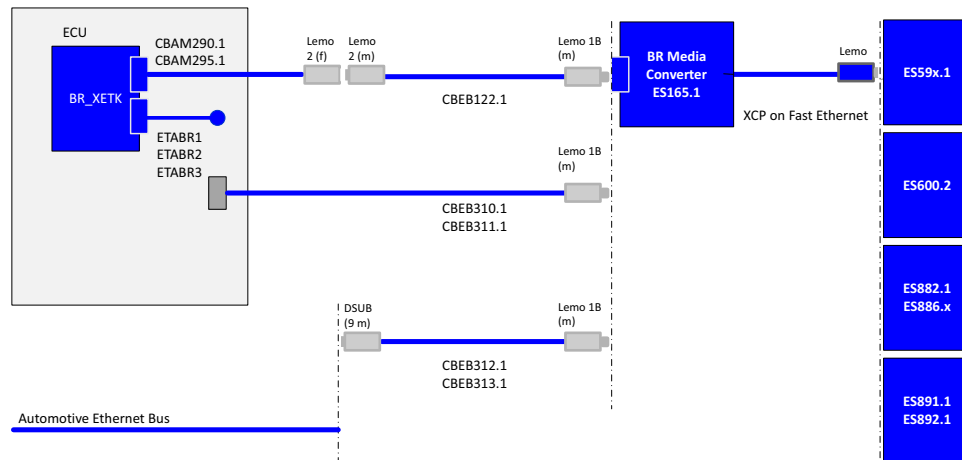


Fig. 4-7 BR_XETK-S4.0 connected with ES165.1 Automotive Ethernet Media Converter via Gigabit Ethernet Interface to ETAS Modules

4.3.7 ES88x ECU and Bus Interface Module

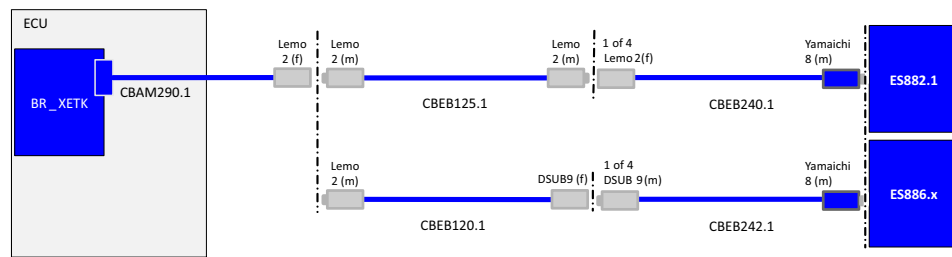



Fig. 4-8 BR_XETK-S4.0 connected via Gigabit Ethernet Interface to ES88x ECU and Bus Interface Modules with ETAS Cables

4.3.8 Power Supply


The BR_XETK-S4.0 needs a permanent power supply (refer chapter “Power Supply” on page 19). Refer to figures Fig. 4-9 or Fig. 4-10 for recommendations on permanent power supply connection. For the fuse details, refer to “Power Supply” on page 42.

 **DANGER**

Undefined vehicle behavior due to an ECU reset

If the external power supply to the ETK is interrupted (e.g. cut, disconnected, etc.), this may lead to the ECU being reset.

- Connect the internal power supply of the ECU to the ETK in addition to the external power supply.
- If this is not possible, ensure that the external power supply to the ETK is not interrupted during operation.

 **WARNING**

Risk to life from electric shock

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

- Use a power supply that is permitted for the product.

Permanent Power Supply inside ECU available

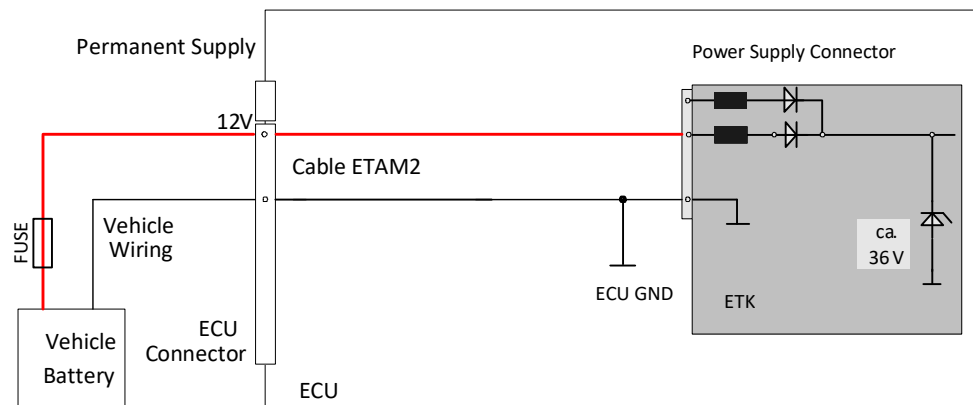


Fig. 4-9 Permanent Power Supply inside ECU available

Permanent Power Supply inside ECU not available

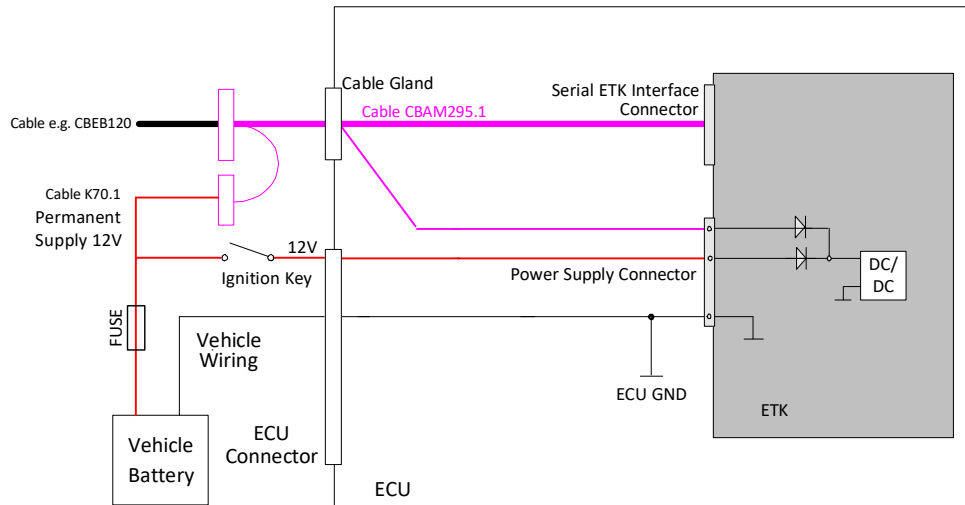


Fig. 4-10 Permanent Power Supply inside ECU not available

5 XETK Configuration

This chapter contains information about the following topics:

- Overview 35
- Configuration Parameter 36

5.1 Overview

As already mentioned in previous chapters, some project-specific adjustments are necessary. Configuration data is stored permanently in a serial Flash.

Generating a valid configuration data set is supported by the "(X)ETK Configuration Tool" (XCT Tool). The XCT Tool contains information on all available XETKs. The user is supported through a graphical interface.

The configuration is done in two steps:

- A Generation of the special address offset for the emulation and measurement data memory.
The location of data areas, measured data output areas, trigger segment addresses etc. are familiar to the ECU software developer, or can be generated automatically. If an ECU description database (ASAP, ...) with the corresponding input exists, these inputs can be downloaded from this database. If necessary, a plausibility check is performed.
- B Connection of the XETK to the ECU.
The ECU hardware developer defines the connection of the XETK to the ECU. The corresponding signals usually have to be adjusted for each microcontroller. All inputs are checked for plausibility, to make sure that a valid configuration is generated.

The "(X)ETK Configuration Tool" can create the following output:

- A Direct XETK configuration
- B Storage of the configuration in a data file
- C The corresponding ASAP2 input

The most important outputs are the entries for the ASAP2 file. All A2L definitions necessary for configuring an ETK will be created. These are:

- Overlay Region definitions
- Memory Segment definitions
- XETK configuration features
- Raster definitions
- Trace windows (in the case of trace measurement)

If these parameters are entered correctly in the corresponding ECU description file, it guarantees that every time the calibration system is started, the XETK is checked for the appropriate configuration. If necessary, the XETK will be configured appropriately to the corresponding project.

5.2 Configuration Parameter

The XCT Tool provides support concerning hardware configuration parameters and their possible values.

They are described for the different (X)ETK types in the help document of the "(X)ETK Configuration Tool".

Starting the "XCT Tool" help

- Start the XCT Tool.
The main window of the XCT tool opens.
- Select in the menu bar **? > Contents**.
The XCT Tool help window opens.
- Choose **Reference to User Interface > (X)ETK Hardware Configuration Parameters**.
- Choose the topic **BR_XETK-S4.0**.
The topic **BR_XETK-S4.0** contains information about the BR_XETK-S4.0 hardware configuration parameters and their possible values.

6 Troubleshooting

6.1 Problems and Solutions

6.1.1 No communication between the ECU and ETK

Cause: No permanent powersupply at the BR_XETK-S4.0.

It is possible, that if ECU and ETK are switched-on simultaneously, no communication between the ECU and ETK can be established.

Workaround: Trigger an ECU reset by application tool.



NOTE

The BR_XETK-S4.0 requires a permanent power supply. It is typically powered directly from the car battery. Refer to chapter "Power Supply" on page 34.

7 Technical Data

This chapter contains information about following topics:

- System Requirements 38
- Data Emulation and Measurement Memory 39
- Configuration 40
- Environmental Conditions 40
- Automotive Ethernet Interface 41
- Power Supply 42
- Microcontroller Interface 43
- Power-on Delay of ECU Reset 43
- SWD Timing Characteristics 44
- Electrical Characteristics (ECU Interface Connector) 45
- Pin Assignment 46
- Mechanical Dimensions 49

7.1 System Requirements

7.1.1 Compatible Hardware

- CBEB100.1, ES160.1, ES162.1, and ES165.1 Automotive Ethernet Media Converter
- ES882.1 and ES886.x ECU Interface Module

7.1.2 PC with one Ethernet Interface

A PC with one open Ethernet interface (1 GBit/s or 100 Mbit/s, full duplex) with RJ45 connection is required. Ethernet interfaces that are implemented with an additional network card in the PC must feature a 32-bit data bus.



NOTE

Half Duplex mode and Half Duplex Ethernet interfaces are not supported.

Requirement to ensure successful Initialization of the Module



NOTE

It is imperative you disable the function which automatically switches to power-saving mode on your PC network adapter when there is no data traffic on the Ethernet interface!

To deactivate the Power saving Mode

Choose in Windows System Control Center / Device Manager / Network Adapter the used network adapter by double-click. Deactivate the "Allow the computer to turn off this device to save power" option in the "Power Management" register. Confirm your configuration.

The manufacturers of network adapter have different names for this function.

Example:

- "Link down Power saving"
- "Allow the computer to turn off this device to save power".

7.1.3 Software Requirements

You need following software versions to support the BR_XETK-S4.0:

Use Case: Measurement & Calibration, ECU Flash Programming

Micro-controller	HSP	INCA	INCA-MCE	ETK Tools	Method
SR6X7 Cut1 28nm	V13.2.0	V7.4 SP2	V7.4 SP2	V4.4.1	DISTAB17
SR6P6	V13.5.0	V7.4.SP5	V7.4.SP5	V4.3.5	DISTAB17
SR6P7	V13.5.0	V7.4.SP6	V7.4.SP6	V4.3.6	DISTAB17

Operating the BR_XETK-S4.0 with older software versions is not possible.

The configuration instructions for the BR_XETK-S4.0 under INCA and HSP are contained in the relevant software documentation.

Use Case: Rapid Prototyping

Item	Description
Supported microcontroller	Microcontrollers listed in chapter on page 39
ASCET-RP	V6.4
INTECRIO	V4.6
Supported Bypass methods	Service Based Bypass SBB V2.1



NOTE

The BR_XETK-S4.0 supports the bypass procedure with DISTAB17. Classical Hook Based Bypass (HBB) method is not supported. This can be realized via "Hooked Service Points" (with the help of a SBB Service Point and DISTAB17).

7.2 Data Emulation and Measurement Memory

7.2.1 Data Emulation Memory

The BR_XETK-S4.0 uses a portion of or up to the entire size of an overlay RAM, to emulate data in internal flash. All the handle sizes must be equally sized. Up to 96 handles are supported.

Microcontroller	Max. RAM	Standby powered
STM SR6X7 Cut1	3 MByte	No

7.2.2 Measurement Data Memory

Item	Characteristics
Location	Typically located within the emulation memory when using DISTAB17 hooks. Measurement data memory can be located in internal RAM.

7.3 Configuration

Item	Characteristics
Configuration	Project-specific configuration for - different microcontrollers or - memory configurations stored in EEPROM
Update	Logic devices updated using HSP software

7.4 Environmental Conditions

Item	Characteristics
Operating temperature range	- 40 °C to +110 °C - 40 °F to +230 °F
Storage temperature range (without packaging)	0 °C to +50 °C +32 °F to +122 °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 (when closed)	Determined by installation in ECU
Overvoltage category (mains supply)	II



NOTE

Maximum Voltage to Earth or to any accessible parts (e.g., ECU Housing, Vehicle Chassis) 60V DC / 30V AC.

Inside the ECU housing the maximum temperature is specified with 110°C, still air. Outside of the ECU housing the maximum ambient temperature is assumed to be 105°C at 1m/s airflow.



NOTE

It is recommended to mount the BR_XETK-S4.0 via gap pad and mounting bracket directly to the ECU housing.

Maximum Thermal Resistance (Rth) BR_XETK-S4.0 glued mounting bracket surface to ambient air [K/W].

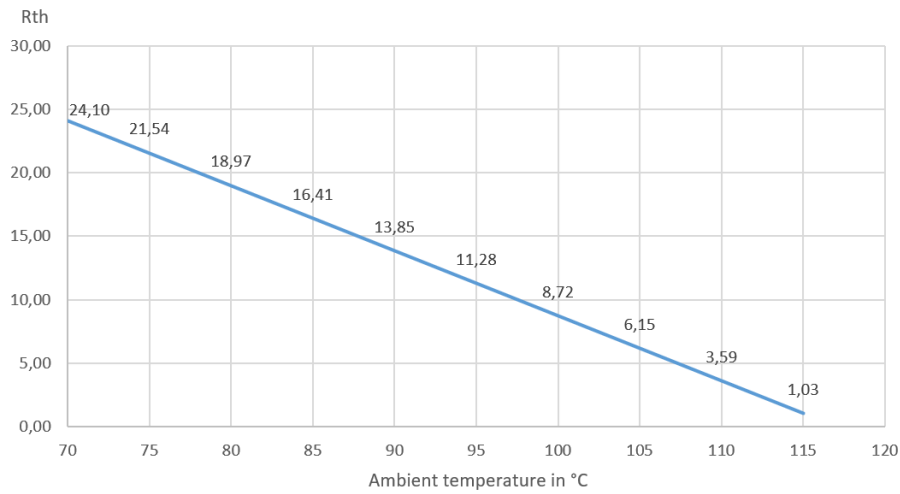


Fig. 7-1 Thermal Resistance surface to ambient air (Rth)

$$R_{th} = (125 - 8 - | T_{amb} |) / 1.95 \text{ K/W}$$

$$T_{jmax} = 125^{\circ}\text{C}$$

7.5 Automotive Ethernet Interface

Item	Characteristics
Connection	Automotive Ethernet 100BASE-T1
Protocol	XCP on TCP/IP or UDP/IP
IP address	Dynamic (standard, for INCA) or static (e.g., for Rapid Prototyping) by using the XETK Configuration Tool (default IP address: 192.168.40.16)
Cable length	max. 15 m
Ethernet Interface	DC decoupling Max. Isolation Voltage 60 V DC, according IEC 61010-1 ("Limit values for accessible parts" in normal, dry condition)



NOTE

The Automotive Ethernet interface is not compatible with the standard Ethernet interfaces of ETAS modules. A CBEB10x.1 Media Converter or an ES88x ECU Interface Module is needed to connect the BR_XETK-S4.0 to the PC.



NOTE

To ensure successful initialization of the network card of your PC, refer to chapter 7.1.2 on page 38

**NOTE**

Maximum Voltage to Earth or to any accessible parts (e.g., ECU Housing, Vehicle Chassis) 60V DC / 30V AC.

7.6

Power Supply

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Permanent power supply (car battery)	U_{Batt}	Vehicle usage ¹⁾	6.0	12	36	V
			[all values $\pm 0\%$]			
Cranking voltage	U_{Batt}	< 3 seconds	3			V
Standby current	I_{STBY}	$U_{\text{Batt}} = 12\text{ V}$; ECU off; no load from ECU; $T = 20\text{ }^\circ\text{C}$	30	40	50	mA
Operating current	I_{Batt}	$U_{\text{Batt}} = 12\text{ V}$; no load from ECU; $T = 20\text{ }^\circ\text{C}$	90	135	250	mA
Power dissipation	P_{Batt}	$U_{\text{Batt}} = 12\text{ V}$; $I = 0\text{ mA}$ at pin VDDSTBY; $T = 20\text{ }^\circ\text{C}$		1.62		W
Power dissipation	P_{Batt}	$U_{\text{Batt}} = 12\text{ V}$; $I = 500\text{ mA}$ at pin VDDSTBY; $I = 80\text{ mA}$ at pin VDDPSTBY; $T = 20\text{ }^\circ\text{C}$		2.7		W
Fuse in the ETK Ubatt supply line. Only required if the power supply or ECU is not protected accordingly.			MINI vehicle blade-type fuse, fast-acting, 2 A 58V DC, e.g. Littelfuse 0997002.WXN			

¹⁾ The BR_XETK-S4.0 implements reverse voltage protection in the same range and may be used only with central load dump protection. 24 V vehicles require U_{Batt} disturbing pulse reduction to 12 V vehicle system. 12 V vehicles don't require special disturbing pulse reductions.

**NOTE**

The BR_XETK-S4.0 will accept permanent power supply voltage dips (for additional details of 3 V low voltage operation, see ISO standard 16750).

**NOTE**

Maximum Voltage to Earth or to any accessible parts (e.g., ECU Housing, Vehicle Chassis) 60V DC / 30V AC.

7.7 Microcontroller Interface

	Symbol	Condition	Min	Typ	Max	Unit
ECU Standby RAM Output Voltage	VDDSTBY	Max 500 mA load	0.94	0.99 9	1.04	V
VDDPSTBY Output Voltage	VDDPSTBY	Max 80 mA load	3.14	3.3	3.46	V
CAL_Wakeup Output Voltage	CAL_WAK EUP	$U_{Batt} = 6.0 - 36 \text{ V};$ load = 0 - 50 mA	U_{Batt} -1V		U_{Batt}	V
ECU Power Supply Supervision Voltage (3.3 V selected)	VDDP	ECU on	2.70	2.80	2.89	V
		ECU off	2.44	2.54	2.66	V
	IDDP	VDDP 3.3 V			200	μA
ECU Standby RAM Supervision Voltage	VDDSTBY / VDDST- BY_SENSE	VDDSTBY \uparrow	0.86	0.89	0.92	V
		VDDSTBY \downarrow	0.85	0.88	0.91	V
	IDDSTBY	VDDSTBY 0.95 V			73	μA

7.8 Power-on Delay of ECU Reset

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Reset delay 1 ¹⁾	t_{Reset1}	$U_{Batt} = 12 \text{ V}$ ECU_VDDP goes high	3	5	20	ms
Reset delay 2 ²⁾	t_{Reset2}	U_{Batt} goes high	100		240	ms

¹⁾ Delay of ECU reset through ETK without transferring the FPGA (U_{Batt} present, VDDP will be switched on)

²⁾ max. delay of ECU reset through ETK (U_{Batt} and VDDP will be switched on)

7.9 SWD Timing Characteristics

The BR_XETK-S4.0 supports SWD modes:

- 2-pin SWD mode: one data pin (direction via protocol), one clock pin



NOTE

SWD timing parameters in this chapter refer to the SWD interface (CON2) of the BR_XETK-S4.0. The SWD wiring to the ECU (ETAM8) must be taken account additionally.

All timings are measured at a reference level of 1.5 V.

7.9.1 2-Pin SWD Mode

Parameter	Symbol	Value [ns]	Comment
SWCLK Clock Period (typ.) (ETK --> Target)	t_{CLK}	14.29	70 MHz SWD Clock Frequency
SWDIO Set-Up Time (ETK --> Target)	t_{SU}	4	
SWDIO Hold Time (ETK --> Target)	t_H	1.5	
SWDIO Clock-to-Out Time (Target --> ETK)	t_{CO}	12.4	
SWDIO Valid Time (Target - -> ETK)	t_{valid}	4.3	

7.10

Electrical Characteristics (ECU Interface Connector)

Signal	Pin Type	V _{OL} (max) [V]	V _{OH} (min) [V]	V _{OH} (max) [V]	V _{IL} (max) [V]	V _{IH} (min) [V]	V _{IH} (max) [V]	Leakage current (max) / (min) [μA]	Addit. load by ETK (typ) [pF] ¹⁾
SWCLK	XO ²⁾	0.7	2.3	3.3	-	-	-	+631	10
SWDIO	IXO ²⁾	0.7	2.3	3.3	0.8	2	5.5	+5000 / +3340	10
TDO	IXO ²⁾	0.7	2.3	3.3	0.8	2	5.5	+5000 / +3340	10
Reserved	XO ²⁾	0.7	2.3	3.3	-	-	-	+20 / -20	10
/TRST	XO ²⁾	0.7	2.3	3.3	-	-	-	+20 / -20	10
/ESR0	IXOD ³⁾	0.7	-	-	0.8	2	5.5	+25 / -20	22
/PORST	IXOD ³⁾	0.7	-	-	0.8	2	5.5	+25 / -20	22
WGDIS	XO ²⁾	0.7	2.3	3.3	-	-	-	+20 / -20	10
DAPE0	XO ²⁾	0.7	2.3	3.3	-	-	-	+631	10
DAPE1	IXO ²⁾	0.7	2.3	3.3	0.8	2	5.5	+5000 / +3340	10
DAPE2	IXO ²⁾	0.7	2.3	3.3	0.8	2	5.5	+5000 / +3340	10
GATE_PORST	I	0.7	2.3	3.3	0.8	3	3.8	+165	15
TDI	XO ²⁾	0.7	2.3	3.3	-	-	-	+20 / -20	10

Pin Type: I: Input, X: Tristate, O: Output, OD: Open Drain

¹⁾ Adapter cable and Samtec connector not considered; PCB 1 pF/cm

²⁾ max 12 mA

³⁾ max 0.2 A

7.11 Pin Assignment

7.11.1 Location of the BR_XETK-S4.0 Interfaces

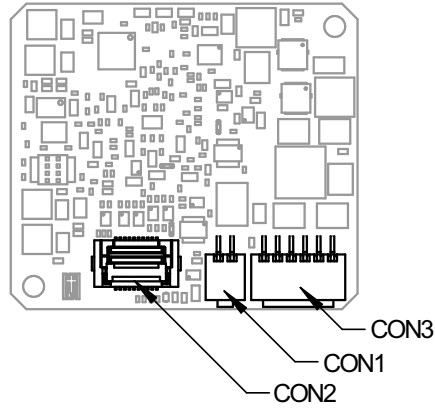


Fig. 7-2 BR_XETK-S4.0 Interfaces

7.11.2 Automotive Ethernet Interface Connector CON1

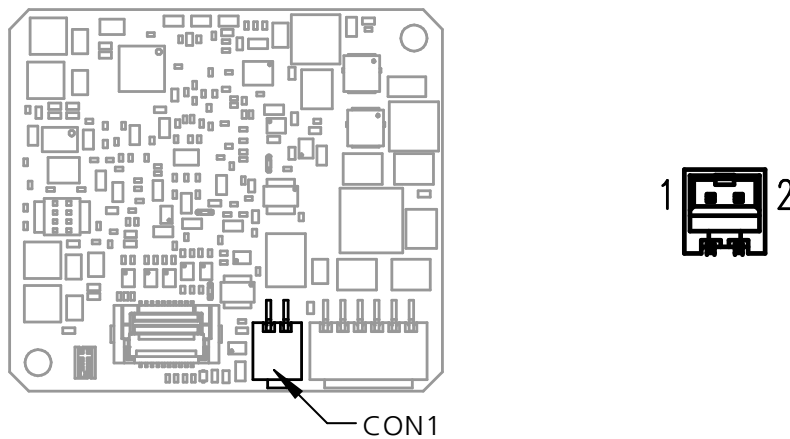


Fig. 7-3 Automotive Ethernet Interface Connector CON1: Location and Pin Assignment

Pin	Signal	Comment
1	AE-	Automotive Ethernet signal AE-
2	AE+	Automotive Ethernet signal AE+

Connector CON1: MOLEX_87438-0243

7.11.3 ECU Interface Connector CON2

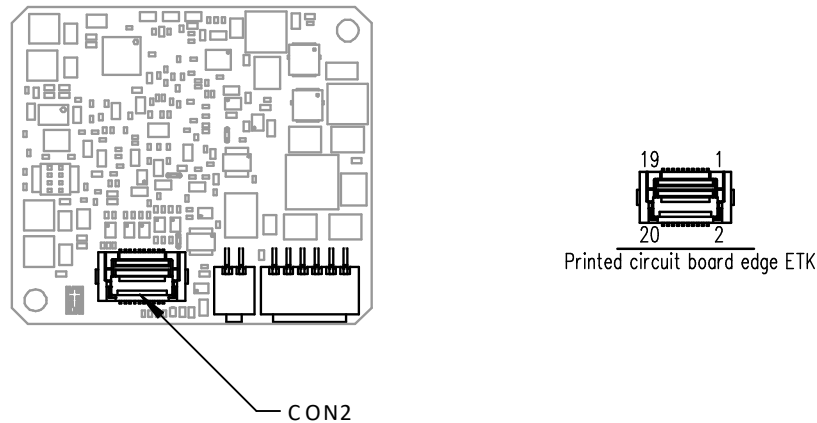


Fig. 7-4 ECU Interface Connector CON2: Location and Pin Assignment

Pin	Signal	Direction	Comment
1	SWCLK	Output	SWD signal
2	/TRST	Output	JTAG signal
3	GND	Power	Signal ground
4	TDO	Input	JTAG signal
5	WDGIS	Output	Watchdog disable signal
6	GND	Power	Signal ground
7	VDDP (Sense)	Input	Sense for switched power supply of ECU (ignition)
8	SWDIO	BiDir	SWD signal
9	GND	Power	Signal ground
10	TDI	Output	JTAG signal
11	/ESR0	BiDir	ECU reset signal (open drain) for reset assertion and supervision
12	GND	Power	Signal ground
13	/PORST	BiDir	ECU Power On Reset signal (open drain) for Reset assertion and supervision
14	RESERVED1	Output	DNU Mfr test signal
15	DAPE2	BiDir	Extended DAP signal
16	RESERVED2	Output	DNU Mfr test signal
17	DAPE1	BiDir	Extended DAP signal
18	GATE_PORST	Input	Overwrite /PORST status at Power On, 0V = /PORST inactive, 3.3V = active
19	DAPE0	Output	Extended DAP signal
20	GND	Power	Signal Ground

Connector CON2: FCI_10106813-021112LF

7.11.4 Power Supply Connector CON3

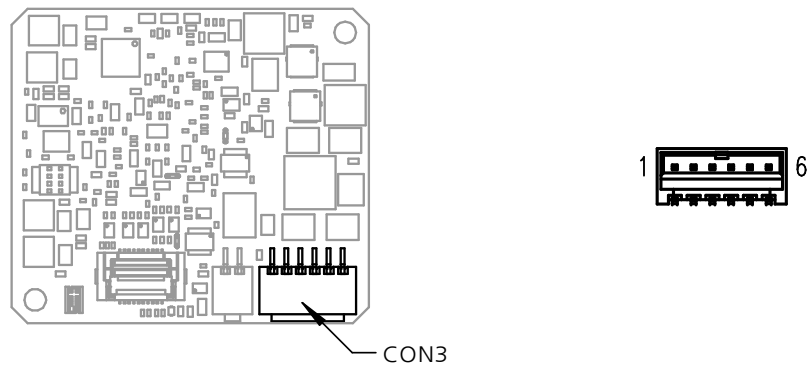


Fig. 7-5 Power Supply Connector CON3: Location and in Assignment

Pin	Signal	Direction	Comment
1	VDDPSTBY (3.3 V supply)	Output	Permanent power supply of ECU SWD Interface, 3.3 V
2	VDDSTBY ¹⁾	Output	Permanent power supply of ECU standby RAM, 0.99 V
3	GND	Input	Power Ground
4	CalWakeup	Output	Switch to Ubatt. ECU wake-up signal (for measurement preparation)
5	Ubatt2	Input	Vehicle battery
6	Ubatt1	Input	Vehicle battery

¹⁾: Do not connect for STM SR6P7X Cut1 microcontroller

Connector CON3: MOLEX_87438-0643

7.12 Mechanical Dimensions

The reference measure for all drawings is millimeters.

Top View

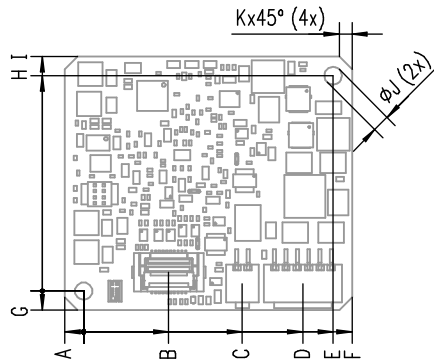


Fig. 7-6 BR_XETK-S4.0 Dimensions - Top View

Item	Dimension [mm]	Tolerance [mm]	Dimension [in]	Tolerance [in]
A	2.50	+/- 0.1	0.098	+/- 0.004
B	11.25	+/- 0.1	0.443	+/- 0.004
C	21.00	+/- 0.2	0.827	+/- 0.008
D	29.00	+/- 0.2	1.142	+/- 0.008
E	33.00	+/- 0.2	1.299	+/- 0.008
F	35.50	+/- 0.2	1.398	+/- 0.008
G	2.50	+/- 0.1	0.098	+/- 0.004
H	28.50	+/- 0.2	1.122	+/- 0.008
I	31.00	+/- 0.2	1.220	+/- 0.008
J	2.30	+0.1/ -0	0.091	+0.004/ -0.000
K	1.00	+/- 0.1	0.039	+/- 0.004

Side View

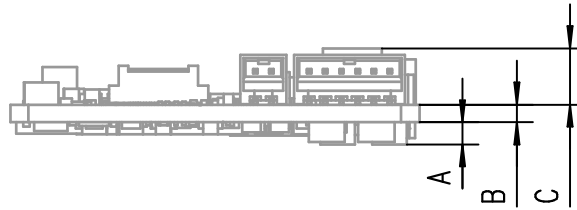


Fig. 7-7 BR_XETK-S4.0 Dimensions - Side View

Item	Dimension [mm]	Tolerance [mm]	Dimension [in]	Tolerance [in]
A	2.00	+0.0/ -0.2	0.079	+0.000/ -0.008
B	1.60	+0.16/ -0.16	0.063	+0.006/ -0.006
C	5.10	+0.0/ -0.2	0.201	+0.000/ -0.008

8 Cables and Accessories

This chapter contains information about the following topics:

- Requirements for failsafe Operation 51
- CON1: ETABR1 Cable 52
- CON1: ETABR2 Cable 53
- CON1: ETABR3 Cable 54
- CON1: CBAM290 Cable 55
- CON1: CBAM295 Cable 57
- CBEB120 Cable 59
- CBEB121 Cable 60
- CBEB125 Cable 61
- CBEB240 Cable 62
- CBEB242 Cable 64
- CON2: ETAM8 ECU Adapter 66
- CON3: ETAM2 ECU Adapter 68
- ETAM5 ECU Adapter 69
- CON3: ETAM9 ECU Adapter 70
- CON3: ETAM10 ECU Adapter 71
- Waterproof Case ETKS_C3 72

8.1 Requirements for failsafe Operation



NOTE

We recommend to use ETAS cables or any other cables certified by the standards for the application. Adhere to the maximum permissible cable lengths!



NOTE

Application-specific cables are available from ETAS. Please contact your ETAS contact partner or e-mail sales.de@etas.com.



NOTE

See chapter "Requirements for failsafe Automotive Ethernet Operation" on page 30 for details on wiring the Automotive Ethernet interface cables.

8.2 CON1: ETABR1 Cable

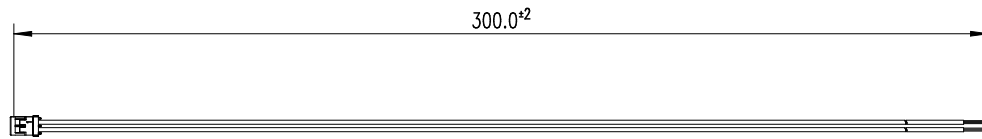


Fig. 8-1 ETABR1 Cable

8.2.1 Usage

The ETABR1 cable is a 100 Mbit/s Automotive Ethernet adapter cable with a 2-pin MOLEX connector (BR_XETK side) and open wires (ECU side).



NOTE

For failsafe operation of the Automotive Ethernet interface twist the ETABR1 cable 5 to 10 times at each 10 cm.

8.2.2 Pin Assignment

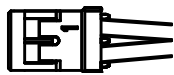


Fig. 8-2 ETABR1 Connector

Connector in Fig. 8-2		Signal
Pin	Color	
1	White	Automotive Ethernet signal AE-
2	Purple	Automotive Ethernet signal AE+

8.2.3 Order Information

Product	Length	Order Number
ETABR1 Automotive Ethernet Interface Cable, MOLEX – open wire (2fc-2c), 0m3	0.3 m	F 00K 109 771

8.3 CON1: ETABR2 Cable

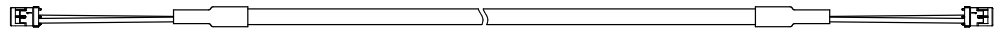


Fig. 8-3 ETABR2 Cable

8.3.1 Usage

The ETABR2 cable is a 100 Mbit/s Automotive Ethernet adapter cable with a 2-pin MOLEX connector (BR_XETK side) and a 2-pin MOLEX connector (ECU side).

The ETABR2 cable requires on the ECU side a 2-pin MOLEX vertical connector (87437-0243) or a 2-pin MOLEX right angle connector (87438-0243).

8.3.2 Mechanical Dimensions

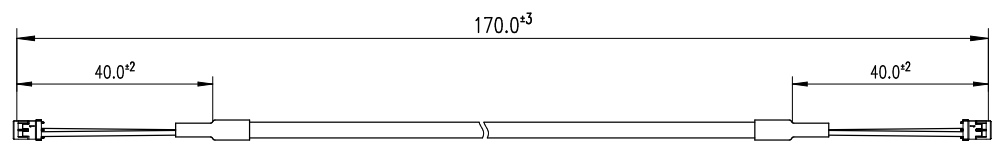


Fig. 8-4 ETABR2 Dimensions

8.3.3 Pin Assignment

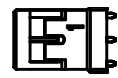


Fig. 8-5 ETABR2 Connector

Connector in Fig. 8-5		Signal
Pin	Color	
1	White	Automotive Ethernet signal AE-
2	Green	Automotive Ethernet signal AE+

8.3.4 Temperature Range

Condition	Temperature Range
Operating temperature	-40 °C to +105 °C -40 °F to +221 °F

8.3.5 Order Information

Product	Length	Order Number
ETABR2 Automotive Ethernet Interface Cable, MOLEX – MOLEX (2fc-2fc), 0m2	0.17 m	F 00K 111 118

8.4 CON1: ETABR3 Cable

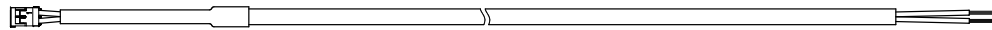


Fig. 8-6 ETABR3 Cable

8.4.1 Usage

The ETABR3 cable is a 100 Mbit/s Automotive Ethernet adapter cable with a 2-pin MOLEX connector (BR_XETK side) and open wires (ECU side).

8.4.2 Mechanical Dimensions

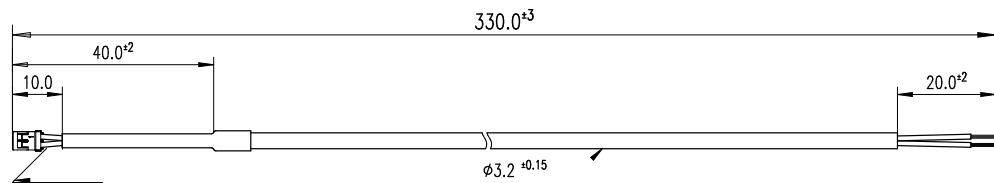


Fig. 8-7 ETABR3 Dimensions

8.4.3 Pin Assignment



Fig. 8-8 ETABR3 Connector

Connector in Fig. 8-8	Signal
Pin	Color
1	White
2	Green

Pin	Color	Signal
1	White	Automotive Ethernet signal AE-
2	Green	Automotive Ethernet signal AE+

8.4.4 Temperature Range

Condition	Temperature Range
Operating temperature	-40 °C to +105 °C -40 °F to +221 °F

8.4.5 Order Information

Product	Length	Order Number
ETABR3 Automotive Ethernet Interface Cable, MOLEX – open wire (2fc-2c), 0m33	0.33 m	F 00K 111 964

8.5 CON1: CBAM290 Cable

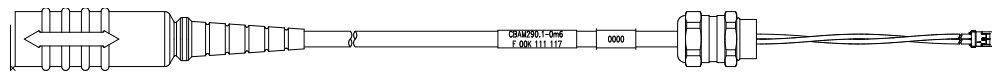


Fig. 8-9 CBAM290.1 Cable

8.5.1 Usage

The CBAM290.1 cable is a 100 Mbit/s Automotive Ethernet cable adapter for BR_X-ETKs. The cable is passed through a M10 screw connection, the shield is connected to the screw.

8.5.2 Mechanical Dimension

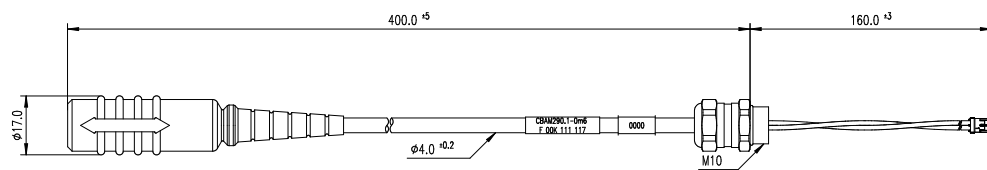


Fig. 8-10 CBAM290.1 Dimension

8.5.3 Tightness

Condition	Degree of Protection
M10 screwing	IP67
CON1 (plugged)	IP65

8.5.4 Mounting

For thin-walled housings, use a through boring with 10.2 mm in the housing and mount the cable with a nut. Cable delivery not includes the nut. The nut must be ordered separately by AGRO (AGRO order number 8000.10). For wall thickness more than 2.5 mm cut a thread into the housing.

The minimum bending radius for the cable is 16 mm.

8.5.5 Pin Assignment

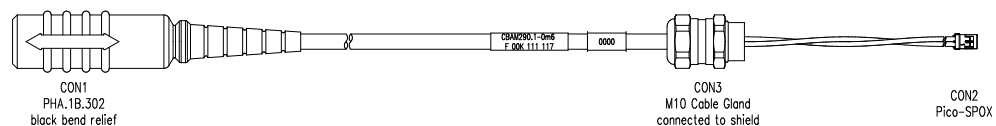


Fig. 8-11 CBAM290.1 Connectors

Connector in Fig. 8-11	Target
Nb.	Color
CON1	Black Cable to Media Converter, e.g. CBEB120.1
CON2	White BR_XETK interface connector
CON3	- ECU housing shield

8.5.6 Temperature Range

Condition	Temperature Range
Operating temperature	-40 °C to +105 °C -40 °F to +221 °F

8.5.7 Order Information

Product	Length	Order Number
ECU Adapter Cable, pre-assembled into M10 screw- ing, shield on ECU-Housing, Lemo 1B PHA - MOLEX (2fc-2fc), 0m60	0.60 m	F 00K 111 117

8.6 CON1: CBAM295 Cable

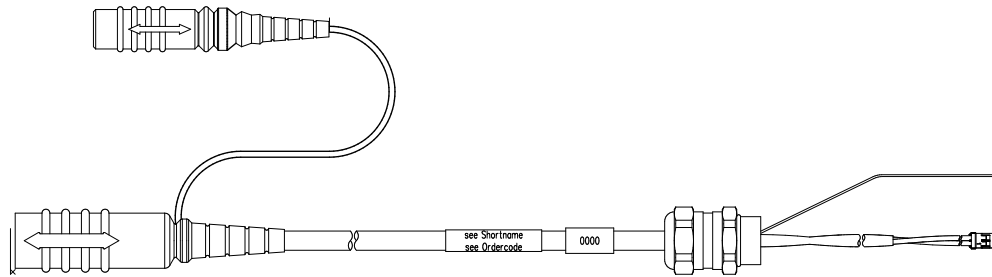


Fig. 8-12 CBAM295 Cable

8.6.1 Usage

BR_XETK ECU adapter and power supply cable for 100 Mbit/s Automotive Ethernet and BR_XETKs with external power supply. Usable for ECUs without permanent power supply inside.

8.6.2 Mechanical Dimension

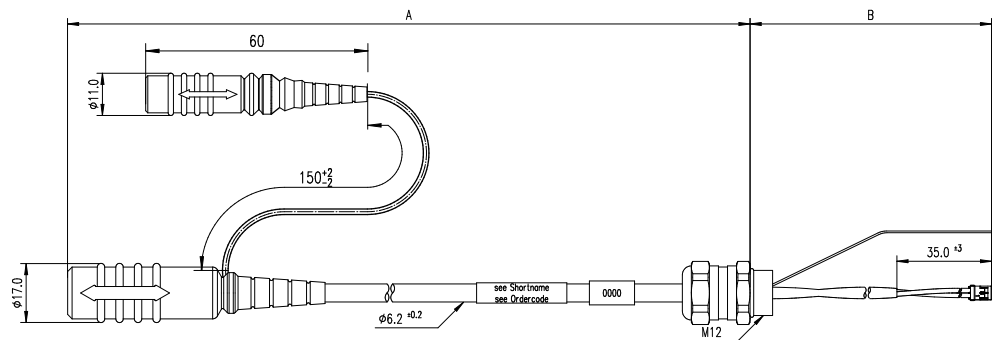


Fig. 8-13 CBAM295 Dimension

Product	Length (see Fig. 8-13)	
	A [mm]	B [mm]
CBAM295.1-0m6	400	160
CBAM295.1-1m8	1500	250

8.6.3 Tightness

Condition	Degree of Protection
M12 screwing	IP67
CON1, CON4 (plugged)	IP65

8.6.4 Mounting

The CBAM295.1 cable is passed through a pre-assembled M12 screw connection. The shield is connected to the screw. For thin-walled housings, use a through boring with 12.2 mm in the housing and mount the cable with a nut. Cable delivery does not include the nut. The nut must be ordered separately by AGRO (AGRO order number 8000.12). For wall thickness more than 2.5 mm cut a thread into the housing.

The minimum bending radius for the cable is 20 mm.

8.6.5 Pin Assignment

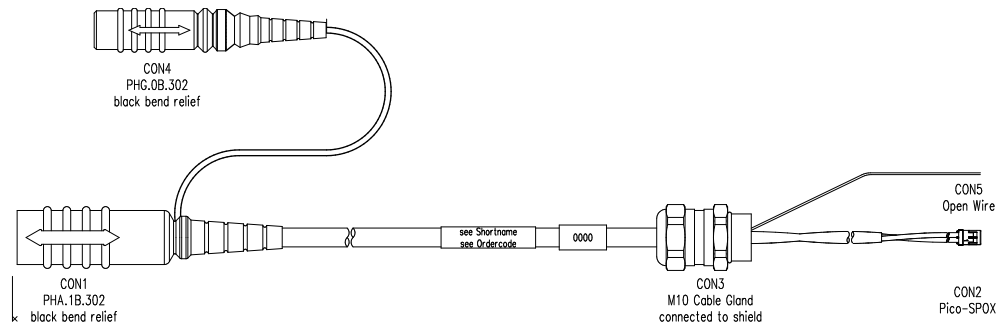


Fig. 8-14 CBAM295 Connectors

Connector in Fig. 8-14 Target

Nb.	Color	Target
CON1	Black	Cable to Media Converter, e.g. CBEB120.1
CON2	White	BR_XETK interface connector
CON3	-	ECU housing shield
CON4	Black	Cable to connect permanent power supply, e.g. K70.1
CON5	Red wire	BR_XETK UBATT pin

8.6.6 Temperature Range

Condition	Temperature Range
Operating temperature	-40 °C to +105 °C -40 °F to +221 °F

8.6.7 Order Information

Product	Length	Order Number
CBAM295.1-0m6 BR_XETK ECU Adapter and Power Supply Cable, pre-assembled into M12 screwing, shield on ECU housing, Lemo 1B PHA - MOLEX (2fc-2fc) / Lemo 1B PHG - open wire (2fc-1c), 0m6	0.60 m	F 00K 111 656
CBAM295.1-1m8 BR_XETK ECU Adapter and Power Supply Cable, pre-assembled into M12 screwing, shield on ECU housing, Lemo 1B PHA - MOLEX (2fc-2fc) / Lemo 1B PHG - open wire (2fc-1c), 1m8	1.80 m	F 00K 111 657

8.7 CBEB120 Cable

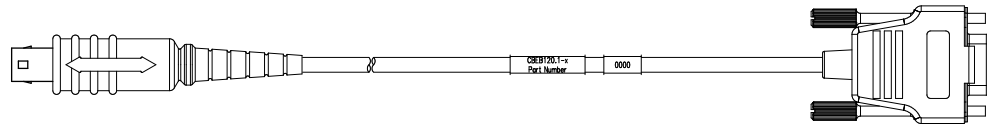


Fig. 8-15 Automotive Ethernet Cable CBEB120.1

8.7.1 Usage

Used to connect a ES88x via a CBEB242.1.

8.7.2 Order Information

Product	Length	Order Number
CBEB120.1-3 100 Mbit/s Broad(R) Reach Connection Cable Lemo 1B FGA - DSUB (2mc-9fc), 3 m	3 m	F 00K 111 111
CBEB120.1-5 100 Mbit/s BroadR Reach Connection Cable Lemo 1B FGA - DSUB (2mc-9fc), 5m	5 m	F 00K 111 112

8.8 CBEB121 Cable

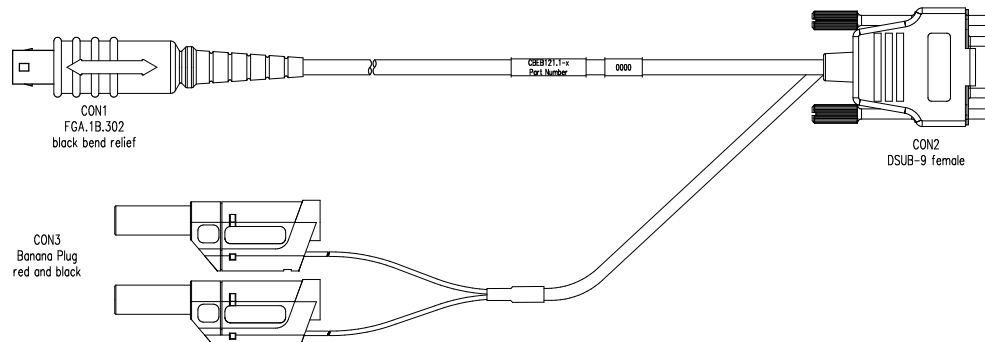


Fig. 8-16 Automotive Ethernet Cable CBEB121.1

8.8.1 Usage

The CBEB121.1 cable is a 100 Mbit/s Automotive Ethernet cable to connect a CBEB100.1 Media Converter with a BR_XETK cable adapter (e.g. CBAM290.1).

8.8.2 Pin Assignment

Connector	Target
CON1	BR_XETK cable adapter
CON2	CBEB100.1 Media Converter
CON3	Power supply

8.8.3 Mounting

Minimum cable bending radius: 16 mm

8.8.4 Order Information

Product	Length	Order Number
CBEB121.1-3 100 Mbit/s Automotive Ethernet Interface Cable plus Power for CBEB100, Lemo 1B FGA - DSUB plus banana connector (2mc-9fc), 3 m	3 m	F 00K 111 113
CBEB121.1-5 100 Mbit/s Automotive Ethernet Interface Cable plus Power for CBEB100, Lemo 1B FGA - DSUB plus banana connector (2mc-9fc), 5 m	5 m	F 00K 111 114

8.9 CBEB125 Cable

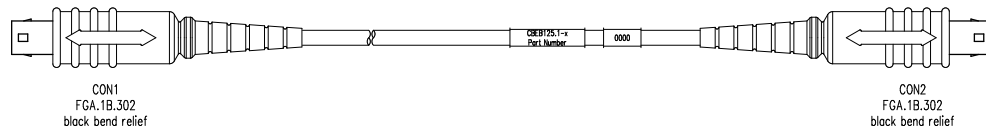


Fig. 8-17 Automotive Ethernet Cable CBEB125.1

8.9.1 Usage

The CBEB125.1 cable is a 100 Mbit/s Automotive Ethernet cable (1:1) for connecting an BR_XETK to the ES88x module.

8.9.2 Order Information

Product	Length	Order Number
CBEB125.1 100 Mbit/s Automotive Ethernet Interface Cable for ES88x, Lemo 1B FGA - Lemo 1B FGA (2mc-2mc), 3 m	3 m	F 00K 111 115
CBEB125.1 100 Mbit/s Automotive Ethernet Interface Cable for ES88x, Lemo 1B FGA - Lemo 1B FGA (2mc-2mc), 5 m	5 m	F 00K 111 116

8.10 CBEB240 Cable

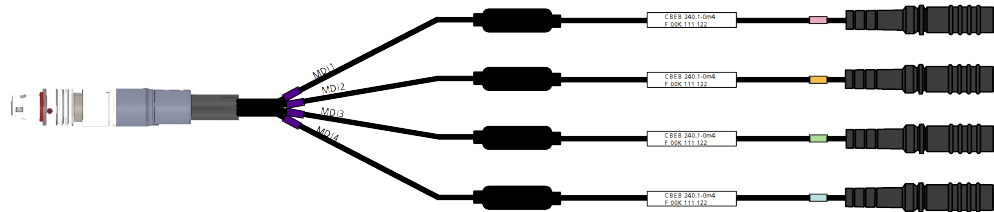


Fig. 8-18 CBEB240.1 Cable

8.10.1 Usage

Cable for connecting the Automotive Ethernet interface (AE) of an ES800 module to BR_XETKs, ECUs with Automotive Ethernet interfaces or Ethernet-based vehicle buses.

8.10.2 Assignment of the Automotive Ethernet Channels to the Cable Sections

The CBEB240.1 cable consists of four identical cable sections [n], each mapped to an Automotive Ethernet channel [n] of the Automotive Ethernet interface (AE) and wired in accordance with the same pattern. Each of the cable section is equipped with a LEMO connector.

8.10.3 Labeling of the Automotive Ethernet Channels and the Cable Sections

The cable sections are labeled n=1 to n=4 and are also marked with the color of the LEDs corresponding to the channels [n] at the AE connection of the module. The colors of the channels [n] at the AE connection of the module and the cable sections are identical.

ES800 module "AE" LED	Color "AE" LED/cable	Automotive Ethernet channel	
		ES882.1	ES886.1
1	Purple	AE 1	AE 1
2	Orange	AE 2	AE 2
3	Green	AE 3	AE 3
4	Blue	-	AE 4

When using the CBEB240.1 cable at the AE interface of the module ES882.1 (three Automotive Ethernet channels), three of the four cable sections are used in accordance with the assignment in the table.

8.10.4 Assignment of the Automotive Ethernet Signal to the LEMO Connectors

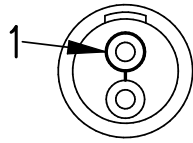


Fig. 8-19 "AE" connection (one cable section)

The assignment of the connections of the LEMO connector of a cable section to the signals of an Automotive Ethernet channel [N] is represented in the table.

Pin	Signal	Meaning
1	AE [n]+	Automotive Ethernet, channel [n], BI_DA+
2	AE [n]-	Automotive Ethernet, channel [n], BI_DA-

8.10.5 Temperature Range

Condition	Temperature Range
Operating temperature	-40 °C to +85 °C -40 °F to +185 °F

8.10.6 Order Information

Product	Length	Order Number
CBEB240.1-0m4 Automotive Ethernet splitter cable 100 Mbit/s, Yamaichi YCP - 4x Lemo PHA 1B (8mc -4x 2fc), 0m4	0.4m	F 00K 111 122

8.11 CBEB242 Cable

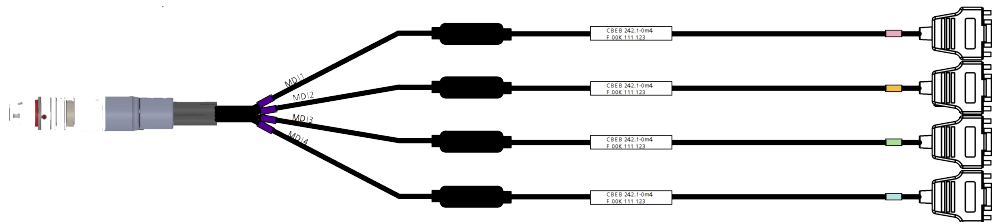


Fig. 8-20 CBEB242.1 cable

8.11.1 Usage

Cable for connecting the Automotive Ethernet interface (AE) of an ES800 module to BR_XETKs.



NOTE

The CBEB242.1 cable is designed for directly connecting BR_XETKs. For other areas of application, ETAS recommends the CBEB240.1 Automotive Ethernet cable (see chapter 8.10 on page 62).

8.11.2 Assignment of the Automotive Ethernet Channels to the Cable Sections

The CBEB242.1 cable consists of four identical cable sections [n], each mapped to an Automotive Ethernet channel [n] of the Automotive Ethernet interface (AE) and wired in accordance with the same pattern. Each of the cable section is equipped with a DSUB9 connector.

8.11.3 Labeling of the Automotive Ethernet Channels and the Cable Sections

The cable sections are labeled [n]=1 to [n]=4 and are also marked with the color of the LEDs corresponding to the channels [n] at the AE connection of the module. The colors of the channels [n] at the AE connection of the module and the cable sections are identical.

ES800 module "AE" LED	Color "AE" LED/cable	Automotive Ethernet channel	
		ES882.1	ES886.1
1	Purple	AE 1	AE 1
2	Orange	AE 2	AE 2
3	Green	AE 3	AE 3
4	Blue	-	AE 4

When using the CBEB242.1 cable at the AE interface of the module ES882.1 (three Automotive Ethernet channels), three of the four cable harnesses are used in accordance with the assignment in the table.

8.11.4 Assignment of the Automotive Ethernet Signal to the DSUB9 Connectors

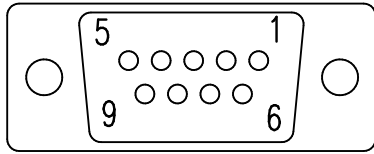


Fig. 8-21 "AE" connection (one cable section)

The assignment of the connections of the DSUB9 connector of a cable section to the signals of an Automotive Ethernet channel [N] is represented in the table.

Pin	Signal	Meaning
4	AE [n]+	Automotive Ethernet, channel [n], BI_DA+
5	AE [n]-	Automotive Ethernet, channel [n], BI_DA-

8.11.5 Temperature Range

Condition	Temperature Range
Operating temperature	-40 °C to +85 °C -40 °F to +185 °F

8.11.6 Order Information

Product	Length	Order Number
CBEB242.1-0m4 Automotive Ethernet Splitter Cable 100 Mbit/s, Yamaichi YCP - 4x DSUB (8mc - 4x 9mc), 0m4	0.4m	F 00K 111 123

8.12 CON2: ETAM8 ECU Adapter

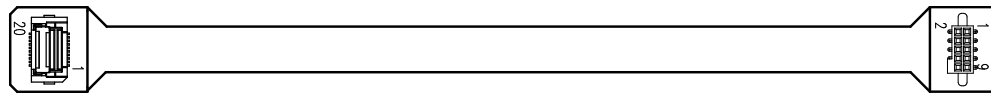


Fig. 8-22 ETAM8 Adapter (bottom view)

8.12.1 Usage

The ETAM8 adapts an 10 pin SAMTEC TFM-105 ECU connector to an BR_XETK-S or FETK-S. The ETAM8 adapter supports JTAG, DAP or LFAST mode.

8.12.2 Product Variants

There are two variants for the ETAM8 adapter available:

- ETAM8A hold the ECU in reset, while the ETK is booting.
- ETAM8B do not pull the reset signal low while booting.

With a ETAM8B adapter the BR_XETK-S4.0 has the same reset behavior like FETK-T1.0.

8.12.3 Mechanical Dimensions

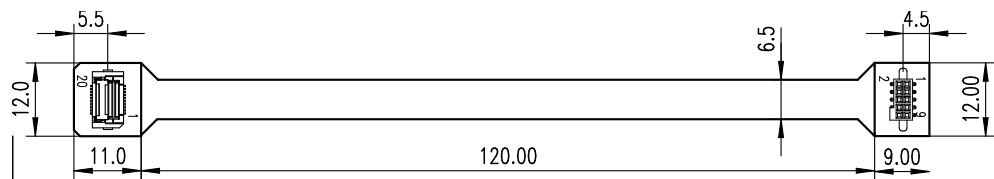


Fig. 8-23 ETAM8 Adapter (bottom view)

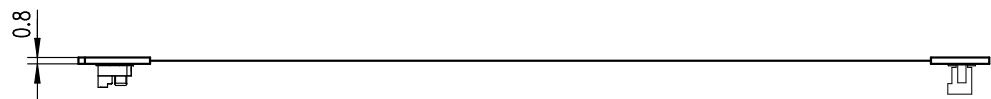


Fig. 8-24 ETAM8 Adapter (side view)

Depending on ECU connector lead style mated height is between 6.35 mm and 11.81 mm (distance between the PCBs).

8.12.4 Pin Assignment

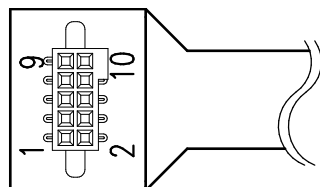


Fig. 8-25 ETAM8 Adapter (pin numbering)

8.12.5 ECU Signals

Pin	JTAG Mode	LFAS Mode	DAP Mode	Description
1	GND	GND	GND	CPU Ground
2	TCK	DRCLK	DAP0	Microcontroller signals (μ C drive: 3.3 V or 5.0 V;
3	/TRST	RXD-	/TRST	BR_XETK drive:
4	TDO	RXD+	DAP2	3.0 V TTL)
5	TMS	TXD+	DAP1	
6	TDI	TXD-	-	
7	WDGDIS	WDGDIS	WDGDIS	WDGDIS: Watchdog disable
8	VDD (Sense)	VDD (Sense)	VDD (Sense)	Debug interface supply, provided by ECU
9	/RESETOUT	/RESETOUT	/RESETOUT	ECU Reset signal for Reset detection
10	/PORESET	/PORESET	/PORESET	Power On Reset (in)

8.12.6 Temperature Range

Condition	Temperature Range
Operating temperature	-40 °C to +110 °C -40 °F to +230 °F

Order Information

Product	Length	Order Number
ETAM8A BR_XETK-S3 ECU Adapter, FCI - SAMTEC SFM (20c - 10fc), 0m11	0.11 m	F 00K 110 754
ETAM8B BR_XETK-S3 ECU Adapter, FCI - SAMTEC SFM (20c - 10fc), 0m11	0.11 m	F 00K 110 881

8.13 CON3: ETAM2 ECU Adapter

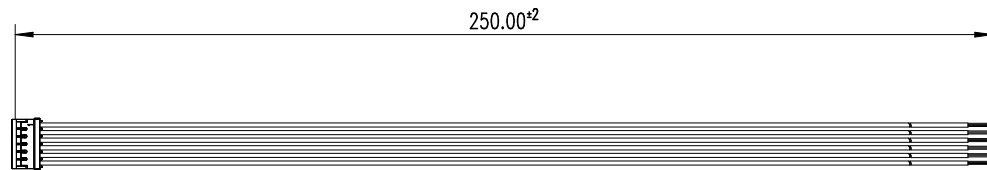


Fig. 8-26 FETK/ XETK - ECU Adapter ETAM2

8.13.1 Pin Assignment



Fig. 8-27 ETAM2 Connector

8.13.2 ECU Signals

Pin	Color	Signal	Description
1	Blue	VDDPSTBY (Supply)	Permanent power to supply ECU interface (optional)
2	Yellow	VDDSTBY (Supply)	Permanent power to supply ECU ED-RAM
3	Brown	GND	Power ground
4	Green	CAL_Wakeup	Switch to Ubatt. ECU wake-up signal (for measurement preparation)
5	Red	SGUBATT2	Car battery
6	Red	SGUBATT1	Car battery

8.13.3 Order Information

Product	Length	Order Number
ETAM2 XETK/FETK ECU Adapter, MOLEX - open wires (6fc - 6c), 0m25	0.25 m	F 00K 109 306

8.14 ETAM5 ECU Adapter

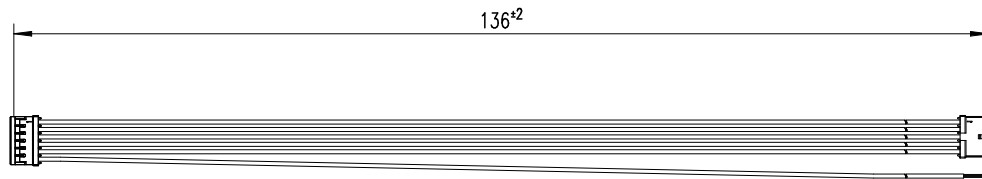


Fig. 8-28 FETK/ XETK - ECU Adapter ETAM5

8.14.1 Order Information

Product	Length	Order Number
ETAM5 FETK ECU Adapter, MOLEX - MOLEX (6fc - 5fc+1c), 0m136	0.136 m	F 00K 110 101

8.14.2

8.15 CON3: ETAM9 ECU Adapter

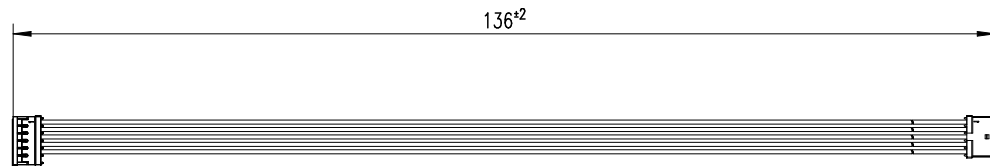


Fig. 8-29 FETK/ XETK - ECU Adapter ETAM9

8.15.1 Usage

The ETAM9 adapts the FETK/ XETK power signals (Molex 6 pin connector) to the ECU with an 5 pin Molex PicoSpox connector.

The ETAM9 cable requires on the ECU side an Vertical SMT Header connector [87437-0543] or an Right Angle SMT Header connector [87438-0543].

8.15.2 ECU Signals

Pin	Color	Signal	Description
1	Blue	VDDPSTBY (Supply)	Permanent power supply of ECU interface
2	Yellow	VDDSTBY (Supply)	Permanent power supply of ECU ED RAM
3	Brown	GND	Power ground
4	Green	Cal_Wakeup	Switch to Ubatt. ECU wake-up signal (for measurement preparation)
5	Red	SGUBATT2	Car battery
6	-	-	No Connect

8.15.3 Temperature Range

Condition	Temperature Range
Operating temperature	-40 °C to +110 °C -40 °F to +230 °F

8.15.4 Order Information

Product	Length	Order Number
ETAM9 F/XETK-S ECU Adapter, MOLEX - MOLEX (6fc - 5fc), 0m136	0.136 m	F 00K 111 043

8.16 CON3: ETAM10 ECU Adapter

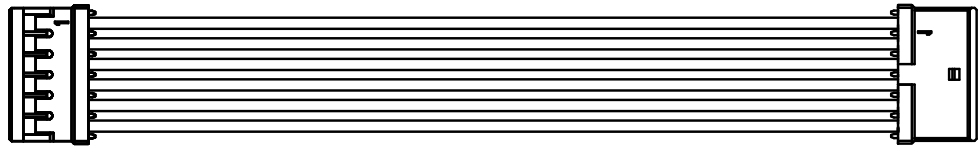


Fig. 8-30 FETK/ XETK - ECU Adapter ETAM10

MOLEX - MOLEX (6fc - 6fc) adapter cable for connecting an F/XETK to the ECU.

8.16.1 Usage

ETAM10 adapts the ETK power signals (Molex 6 pin connector) to an ECU with a 6 pin Molex PicoSpox connector.

The ECU connector is available as Vertical SMT Header [87437-0643] or Right Angle SMT Header [87438-0643].

8.16.2 Mechanical Dimensions

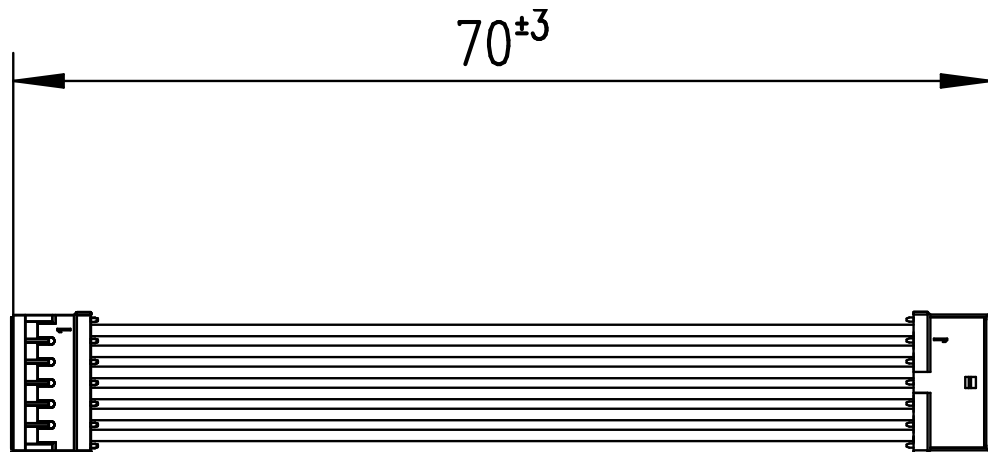


Fig. 8-31 ETAM10 Adapter Dimensions

8.16.3 ECU Signals

Pin	Color	Signal	Description
1	Blue	VDDPSTBY (Supply)	Permanent power supply of ECU interface
2	Yellow	VDDSTBY (Supply)	Permanent power supply of ECU ED RAM
3	Brown	Ground	Power ground
4	Green	CaI_Wakeup	Switch to Ubatt. ECU wake-up signal (for measurement preparation)
5	Red	SGUBATT2	Car battery
6	Red	SGUBATT1	Car battery

8.17 Waterproof Case ETKS_C3

8.17.1 Dimensions

For mounting the BR_XETK-S4.0 on top of ECUs, an external case is available. It is small, robust and waterproof (IP65).

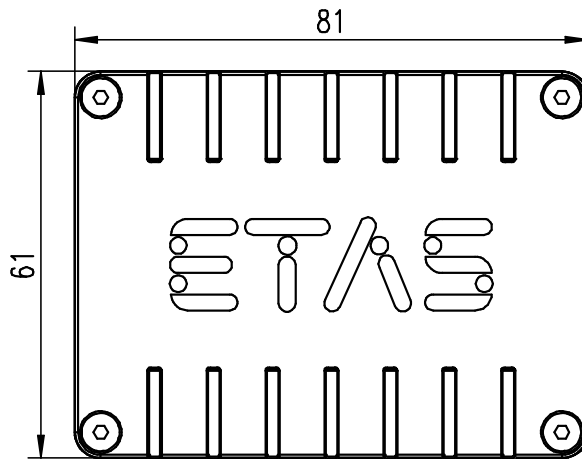


Fig. 8-32 ETKS_C3 Top View

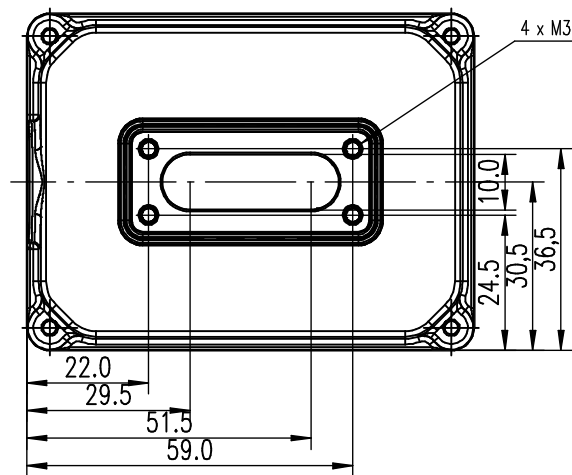


Fig. 8-33 ETKS_C3 Bottom View

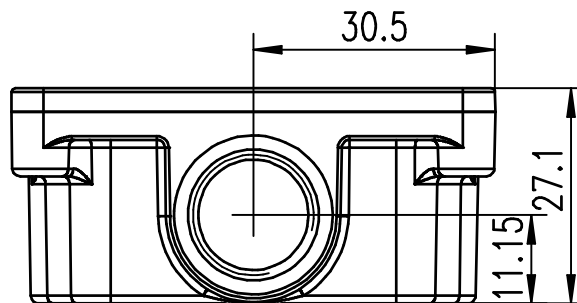


Fig. 8-34 ETKS_C3 Side View with PG9 thread

8.17.2 Mounting plate

For the BR_XETK-S4.0 a mounting plate for the waterproofed case is necessary.

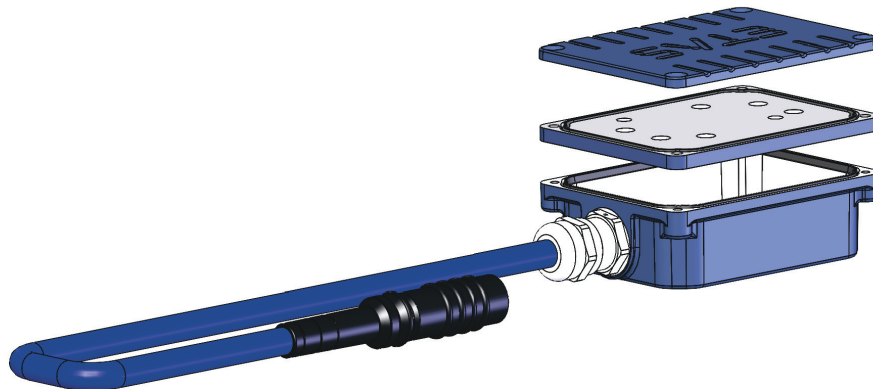


Fig. 8-35 Mounting plate

8.17.3 Order Information

Order Name	Short Name	Order Number
Waterproof case, designed for ETK-S4.x, ETK-S6.x, ETK-S2x, and XETK-S2x	ETKS_C3	F 00K 107 683
AS_ETKS_C3_A1 adapter plate for ETKS_C3 water proofed case	AS_ETKS_C3_A1	F 00K 114 333



NOTE

To be able to use the BR_XETK-S4.0 ECU adapter cables, an adapter ring from PG9 to M10/M12 is required.

Further information on request.

8.17.4 Temperature Range

Condition	Temperature Range
Operating temperature	-40 °C to +110 °C -40 °F to +230 °F

8.17.5 Order Information

Product	Length	Order Number
ETAM10 F/XETK-SECU Adapter, MOLEX - MOLEX (6fc - 6fc), 0m07	0.07 m	F 00K 111 814

9 Ordering Information

9.1 BR_XETK-S4.0

BR_XETK-S4.0B

Order Name	Short Name	Order Number
BR_XETK-S4.0B ECU interface for the STMicroelectronics STELLAR SR6 microcontroller family (including gap pad)	BR_XETK-S4.0B	F 00K 113 468

Package Contents

- BR_XETK-S4.0B Emulator Probe for STM STELLAR SR6 MCU Family including gap pad,
- List "Content of this Package",
- ETK Safety Advice,
- China-RoHS-leaflet_Compact

BR_XETK-S4.0B-M

Order Name	Short Name	Order Number
BR_XETK-S4.0B-M ECU interface for the STMicroelectronics STELLAR SR6 microcontroller family supporting Multiple Logical ECUs (including gap pad)	BR_XETK-S4.0B-M	F 00K 113 632

Package Contents

- BR_XETK-S4.0B-M Emulator Probe for STM STELLAR SR6 MCU Family including gap pad,
- List "Content of this Package",
- ETK Safety Advice,
- China-RoHS-leaflet_Compact

9.2 Cable and Adapter



NOTE

We recommend to use ETAS cables or any other cables certified by the standards for the application. Adhere to the maximum permissible cable lengths!



NOTE

Application-specific cables are available from ETAS. Please contact your ETAS contact partner or e-mail sales.de@etas.com.

9.2.1 XETK - ECU Adapter

Order Name	Short Name	Order Number
ETAM2 XETK/FETK ECU Adapter, MOLEX - open wires (6fc - 6c), 0m25	ETAM2	F 00K 109 306
ETAM5 FETK ECU Adapter, MOLEX - MOLEX (6fc - 5fc+1c), 0m136	ETAM5	F 00K 110 101
ETAM8A BR_XETK-S3 ECU Adapter, FCI - SAM-TEC SFM (20c - 10fc), 0m11	ETAM8A	F 00K 110 754
ETAM8B F/XETK-S ECU Adapter, FCI - SAMTEC SFM (20c - 10fc), 0m11	ETAM8B	F 00K 110 881
ETAM9 F/XETK-S ECU Adapter, MOLEX - MOLEX (6fc - 5fc), 0m136	ETAM9	F 00K 111 043
ETAM10 F/XETK-S ECU Adapter, MOLEX - MOLEX (6fc - 6fc), 0m07	ETAM10	F 00K 111 814

9.2.2 Automotive Ethernet Cable

Order Name	Short Name	Order Number
Automotive Ethernet Interface Cable, MOLEX – open wire (2fc-2c), 0m3	ETABR1	F 00K 109 771
Automotive Ethernet Interface Cable, MOLEX – MOLEX (2fc-2fc), 0m2	ETABR2	F 00K 111 118
Automotive Ethernet Interface Cable, MOLEX – open wire (2fc-2c), 0m33	ETABR3	F 00K 111 964
ECU Adapter Cable, pre-assembled into M10 screwing, shield on ECU-Housing, Lemo 1B PHA - MOLEX (2fc-2fc), 0m60	CBAM290.1-0m6	F 00K 111 117
BR_XETK ECU Adapter and Power Supply Cable, pre-assembled into M12 screwing, shield on ECU housing, Lemo 1B PHA - MOLEX (2fc-2fc) / Lemo 1B PHG - open wire (2fc-1c), 0m6	CBAM295.1-0m6	F 00K 111 656
BR_XETK ECU Adapter and Power Supply Cable, pre-assembled into M12 screwing, shield on ECU housing, Lemo 1B PHA - MOLEX (2fc-2fc) / Lemo 1B PHG - open wire (2fc-1c), 1m8	CBAM295.1-1m8	F 00K 111 657
100 Mbit/s Broad(R) Reach Connection Cable Lemo 1B FGA - DSUB (2mc-9fc), 3 m	CBEB120.1-3	F 00K 111 111
100 Mbit/s BroadR Reach Connection Cable for Lemo 1B FGA - DSUB (2mc-9fc), 5m	CBEB120.1-5	F 00K 111 112
100 Mbit/s Automotive Ethernet Interface Cable plus Power for CBEB100, Lemo 1B FGA - DSUB plus banana connector (2mc-9fc), 3 m	CBEB121.1-3	F 00K 111 113
100 Mbit/s Automotive Ethernet Interface Cable plus Power for CBEB100, Lemo 1B FGA - DSUB plus banana connector (2mc-9fc), 5 m	CBEB121.1-5	F 00K 111 114
100 Mbit/s Automotive Ethernet Interface Cable for ES88x, Lemo 1B FGA - Lemo 1B FGA (2mc-2mc), 3 m	CBEB125.1-3	F 00K 111 115
100 Mbit/s Automotive Ethernet Interface Cable for ES88x, Lemo 1B FGA - Lemo 1B FGA (2mc-2mc), 8 m	CBEB125.1-8	F 00K 111 116
Automotive Ethernet Splitter Cable 100 Mbit/s, Yamaichi YCP - 4x Lemo PHA 1B (8mc -4x 2fc), 0m4	CBEB240.1-0m4	F 00K 111 122
Automotive Ethernet Splitter Cable 100 Mbit/s, Yamaichi YCP - 4x DSUB (8mc - 4x 9mc), 0m4	CBEB242.1-0m4	F 00K 111 123

9.2.3 Media Converter

Order Name	Short Name	Order Number
Media Converter Cable, DSUB - RJ45 (9mc-8mc), 1m	CBEB100.1-1m0	F 00K 110 094
ES160.1 Media Converter (1xAE) with RJ45-plug (Gigabit Ethernet) and external power connection with banana connectors	ES160.1	F 00K 112 181
ES160.1-S Media Converter (1xAE) with RJ45-plug (Gigabit Ethernet) and external power connection with safety banana connectors	ES160.1-S	F 00K 112 182
ES162.1 Media Converter (1xAE) with Lemo-plug (Gigabit Ethernet and power supply)	ES162.1	F 00K 112 183
ES165.1 Media Converter with Lemo-plug (Gigabit Ethernet and power supply)	ES165.1	F 00K 112 184

9.2.4 Power Cable

Order Name	Short Name	Order Number
External Power Supply Cable for ETKs, Lemo 0B FGG - open wire (2mc-1c), 2m	K70.1	F 00K 109 270

9.2.5 Mounting Material

Order Name	Short Name	Order Number
Gap pad as spare part for BR_XETK-S3.0/ BR_XETK-S4.0	BR_XETK-S3_GP	F 00K 110 752
Mounting bracket for BR_XETK-S3.0/ BR_XETK-S4.0	BR_XETK-S3_MB	F 00K 110 753

Adhesive

ETAS recommends adhesive LOCTITE SI 5145 for fixing the mounting bracket on the ECU housing.

9.2.6 Waterproof Case

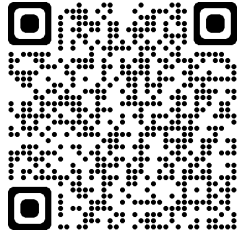
Order Name	Short Name	Order Number
Waterproof case, designed for ETK-S4.x, ETK-S6.x, ETK-S2x, and XETK-S2x	ETKS_C3	F 00K 107 683
AS_ETKS_C3_A1 adapter plate for ETKS_C3 water proofed case	AS_ETKS_C3_A1	F 00K 114 333

10 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/en/hotlines.php



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Internet: www.etas.com

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