

ETAF6

Debug Adapter for Renesas SH72xx- Debugger

User Guide

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Document ETAF6 R03_EN – 09.2022

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1 About this Document

1.1 Classification of Safety Messages

The safety messages used here warn of dangers that can lead to personal injury or damage to property:



DANGER

indicates a hazardous situation with a high risk of death or serious injury if not avoided.



WARNING

indicates a hazardous situation of medium risk, which could result in death or serious injury if not avoided.



CAUTION

indicates a hazardous situation of low risk, which may result in minor or moderate injury if not avoided.

NOTICE

indicates a situation, which may result in damage to property if not avoided.

1.2 Scope of Supply

Prior to the initial commissioning of the module, please check whether the product was delivered with all required components and cables (see chapter "Ordering Information"). Additional cables and adapters can be obtained separately from ETAS. A list of accessories and their order designation is available in this manual and at the ETAS Home Page.

2 Safety Information

2.1 General Safety Information

Please observe the Product Safety Notices ("ETAS Safety Notice") and the following safety notices to avoid health issues or damage to the device.



NOTE

Carefully read the documentation (Product Safety Advice and this User Guide) that belongs to the product prior to the startup.

ETAS GmbH does not assume any liability for damages resulting from improper handling, unintended use or non-observance of the safety precautions.

2.2 Requirements for Users and Duties for Operators

The product may be assembled, operated and maintained only if you have the necessary qualification and experience for this product. Incorrect operation or operation by users without sufficient qualification may lead to injuries or death or property damages.

General Safety at Work

The existing regulations for safety at work and accident prevention must be followed. All applicable regulations and statutes regarding operation must be strictly followed when using this product.

2.3 Intended Use

An ETK is an electronic component that is installed in a vehicle control unit (ECU) to read data from the ECU or write data to the ECU.

Application Area of the Product

This product was developed and approved for automotive applications. For use in other application areas, please contact your ETAS contact partner.

Requirements for Operation

The following requirements are necessary for safe operation of the product:

- Use the product only according to the specifications in the corresponding User Guide. With any deviating operation, the product safety is longer ensured.
- Observe the regulations applicable at the operating location concerning electrical safety as well as the laws and regulations concerning work safety!
- Do not apply any voltages to the connections of the product that do not correspond to the specifications of the respective connection.
- Connect only current circuits with safety extra-low voltage in accordance with EN 61140 (degree of protection III) to the connections of the product.
- 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.

- Use only lab power supplies with double protection to the supply system.
- Ensure that the connections of the power supply are easily accessible.
- The module does not have an operating voltage switch.
 - Switch on the product by connecting the power supply cable with the power supply or by switching on the power supply.
 - Switch off the product by disconnecting it from the power supply or by switching off the power supply.

**DANGER**

Connect the power cord only with a vehicle battery or with a lab power supply! A connection to power outlets is prohibited.

- Route the power cord in such a way that it is protected against abrasion, damages, deformation and kinking. Do not place any objects on the power cord.
- Never apply force to insert a plug into a socket. Ensure that there is no contamination in and on the connection, that the plug fits the socket, and that you correctly aligned the plugs with the connection.
- Do not use the product in a wet or damp environment.
- Do not use the product in potentially explosive atmospheres.
- Keep the surfaces of the product clean and dry.

Potential Equalization**CAUTION****Danger from inadvertent current flow!**

Depending on the design, the shield of the Ethernet cables can be connected with the housing of the module. Install the products only on components with the same electrical potential or isolate the products from the components.

Requirements for the technical State of the Product

The product is designed in accordance with state-of-the-art technology and recognized safety rules. The product may be operated only in a technically flawless condition and according to the intended purpose and with regard to safety and dangers as stated in the respective product documentation. If the product is not used according to its intended purpose, the protection of the product may be impaired.

Maintenance and Cleaning

The product is maintenance-free. Use a lightly moistened, soft, lint-free cloth for cleaning the product. Ensure that no moisture can enter. Never spray cleaning agents directly onto the product. Do not use any sprays, solvents or abrasive cleaners which could damage the product.

Transport and Installation



CAUTION

The Product can be damaged or destroyed!

Some components of the ETK board may be damaged or destroyed by electrostatic discharges. Please keep the ETK in its storage package until it is installed. The board should only be taken from its package, configured, and installed at a workplace that is protected against static discharge.



CAUTION

During installation and removal, ECU and ETK must be in a de-energized state!



CAUTION

Risk of short circuiting the internal signals of the Product!

When you mount the Product, you must ensure that the screws and washers used will not penetrate the Product printed circuit board.



CAUTION

Differences in case ground potentials can cause high currents to flow through the shields of the cables that connect various system modules.








Ensure that the module mounting surfaces are at the same electrical potential or insulate the modules from their mounting surfaces.

Cabling

Use exclusively ETAS cables at the connections of the product! Adhere to the maximum permissible cable lengths! Observe the assignment of the cables to the connectors! Detailed information about cabling is located in the ETK User Guides.

2.4 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 2.5 on page 9
	Symbol for CE conformity, see chapter 2.6 on page 9
	Symbol for CE conformity, see chapter 2.7 on page 9
	Symbol for China RoHS, see chapter 2.8.1 on page 9
	Symbol for China RoHS, see chapter 2.8.2 on page 9
	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), depending on product Serial Number is not available.
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.

2.5 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 WEEE symbol

The WEEE symbol (see Fig 1) 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.

2.6 CE marking

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.

2.7 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.

2.8 RoHS Conformity

2.8.1 European Union

The EU Directive 2011/65/EU limits the use of certain dangerous materials for electrical and electronic devices (RoHS conformity). ETAS confirms that the product corresponds to this directive which is applicable in the European Union.

2.8.2 China

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

3 Introduction

Adapts to Renesas JTAG or Debugger Plug for debugger connection. There are two specific applications.

- Adapt ECU-ETK-Connector to 14 Pin Debugger or 36 Pin Debugger or Trace.
- Adapt ETK-Debugger-Connector to 14 Pin or 36 Pin Debugger3D View.

3.1 View

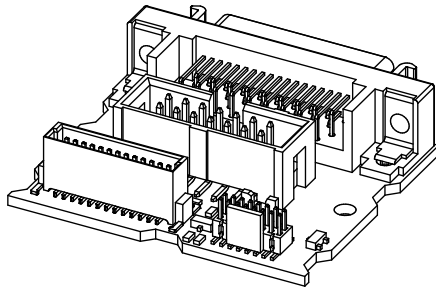


Figure 1: 3D-View

4 Technical Data

4.1 Component Placement

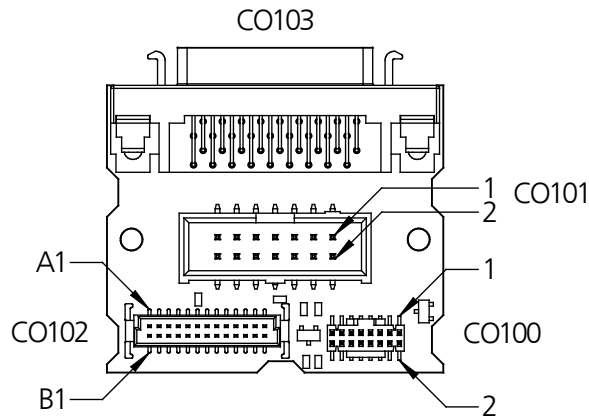


Figure 2: Component Placement and Pin Ordering

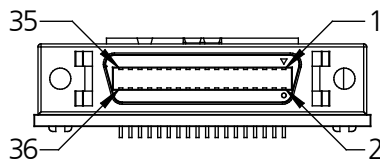


Figure 3: Pin Ordering CO103

4.2 Applications

4.2.1 Connecting Debugger to ECU

Connect CO102 to ECU with an ETAF1 Adapter. Connect Debugger with 14Pin Interface to Connector CO101 (no AUD trace function) or connect Debugger/Trace with 36Pin Interface to CO103 (AUD trace supported).

4.2.2 Connecting Debugger to ETK

Connect CO100 to ETK with the ETAF6 Flatcable. Connect Debugger with 14Pin Interface to Connector CO101 (no AUD trace function) or connect Debugger/Trace with 36Pin Interface to CO103 (no AUD trace function).

4.3 Pin Assignment

4.3.1 CO100 - 16 Pin Connector to ETK Debugger Connector

Pin Number	Signal	Description
1	TMS	JTAG Signal
2	VOOUT	Target supply for sensing
3	TDO	JTAG Signal
4	GND	Signal Ground
5	AUDCK	Debug Interface Signal
6	GND	Signal Ground
7	TDI	JTAG Signal
8	/RESET	Reset Signal
9	/TRST	JTAG Signal
10	/ASEBRKAK	Debug Interface Signal
11	TCK	JTAG Signal
12	GND	Signal Ground
13	RESERVED1	Reserved Signal
14	/DETECT	Debugger Detect Signal
15	RESERVED1	Reserved Signal
16	RESERVED1	Reserved Signal

4.3.2 CO101 – 14 Pin Connector to Debugger

Pin Number	Signal	Description
1	TCK	JTAG Signal
2	NC	Not Connected
3	/TRST	JTAG Signal
4	/DETECT	Debugger Detect Signal (Low Active)
5	TDO	JTAG Signal
6	GND	Signal Ground
7	/ASEBRKAK	Debug Interface Signal
8	VCC	Interface Power
9	TMS	JTAG Signal
10	GND	Signal Ground
11	TDI	JTAG Signal
12	GND	Signal Ground
13	/RESET	Reset Signal
14	GND	Signal Ground

4.3.3 CO102 – 26Pin Connector to ECU

Pin Number	Signal	Description
A1	/AUDSYNC	Debug Interface Signal
A2	/ASEBRKAK	Debug Interface Signal
A3	NC	Not Connected

Pin Number	Signal	Description
A4	AUDCK	Debug Interface Signal
A5	TDO	JTAG Signal
A6	TMS	JTAG Signal
A7	TCK	JTAG Signal
A8	TDI	JTAG Signal
A9	NC	Not Connected
A10	/TRST	JTAG Signal
A11	ASEMD	Debug Interface Signal
A12	AUDMD	Debug Interface Signal
A13	VCC	Target supply for sensing
B1	AUDATA3	Debug Interface Signal
B2	AUDATA2	Debug Interface Signal
B3	NC	Not Connected
B4	GND	Signal Ground
B5	GND	Signal Ground
B6	GND	Signal Ground
B7	GND	Signal Ground
B8	GND	Signal Ground
B9	GND	Signal Ground
B10	/RESET	Reset Signal
B11	AUDATA1	Debug Interface Signal
B12	AUDATA0	Debug Interface Signal
B13	NC	Not Connected

4.3.4 CO103 - 36Pin Connector to Debugger / Trace

Pin Number	Signal	Description
1	AUDCK	Debug Interface Signal
2	GND	Signal Ground
3	AUDATA0	Debug Interface Signal
4	GND	Signal Ground
5	AUDATA1	Debug Interface Signal
6	GND	Signal Ground
7	AUDATA2	Debug Interface Signal
8	GND	Signal Ground
9	AUDATA3	Debug Interface Signal
10	GND	Signal Ground
11	/AUDSYNC	Debug Interface Signal
12	GND	Signal Ground
13	NC	Not Connected
14	GND	Signal Ground
15	NC	Not Connected
16	GND	Signal Ground
17	TCK	JTAG Signal

Pin Number	Signal	Description
18	GND	Signal Ground
19	TMS	JTAG Signal
20	GND	Signal Ground
21	/TRST	JTAG Signal
22	/DETECT	Debugger Detect Signal (Low Active)
23	TDI	JTAG Signal
24	GND	Signal Ground
25	TDO	JTAG Signal
26	GND	Signal Ground
27	/ASEBRKAK	Debug Interface Signal
28	GND	Signal Ground
29	NC	Not Connected
30	GND	Signal Ground
31	/RESET	Reset Signal
32	GND	Signal Ground
33	GND	Signal Ground
34	GND	Signal Ground
35	NC	Not Connected
36	GND	Signal Ground

4.4 Mechanical Drawings

Measurements in mm

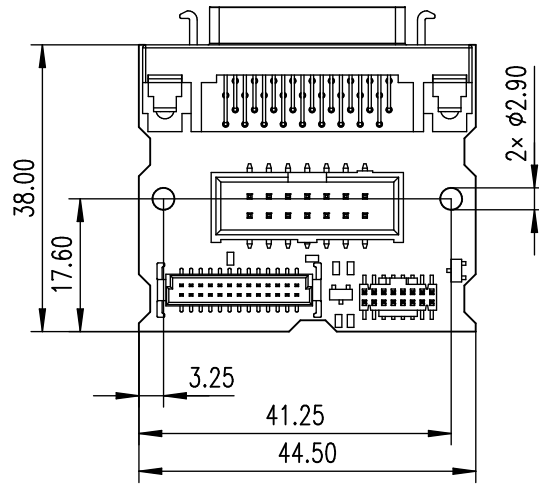


Figure 4: ETAF6 Top View

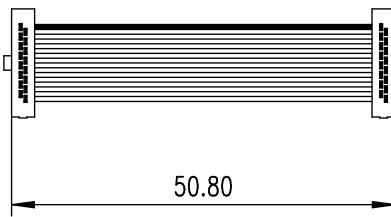


Figure 5: ETAL6 Flat Ribbon Cable

4.5 Operating Temperature Range

Condition	Temperature
Operating Temperature	-40°C - +105°C

5 Ordering Information

Short Name	Order Number
ETAF6	F 00K 104 773
ETAF1	F 00K 001 373

6 ETAS Contact Addresses

ETAS HQ

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Germany

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Fax: +49 711 3423 2106
WWW: www.etas.com

ETAS Subsidiaries and Technical Support

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

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