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ETKS3.0
Emulator Probe for Nexus Debug Interfaces

Data Sheet

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1 General Information

The introductory chapter provides you with information on the basic safety instructions, returning the product and recycling, and how to use this manual.

1.1 Basic Safety Instructions

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

1.1.1 Correct Use

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

1.1.2 Labeling of Safety Instructions

The safety instructions contained in this manual are shown with the standard danger symbol shown in Fig. 1-1 on page 7:



Fig. 1-1 Standard Danger Symbol

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



WARNING!

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



CAUTION!

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

1.1.3 Demands made re the Technical State of the Product

The following requirements are made to ensure safe operation of the module:

- Ensure you observe the notes on environmental conditions (see section 5.2 on page 21).

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- Ensure you adhere to the port and setting values (see section 5.5 on page 22 and section 5.6 on page 23).

CAUTION!

The ETK 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 work place that is protected against static discharge.

CAUTION!

Risk of short circuiting the internal signals of the ETK!
When you mount the ETK to the ECU, you must ensure that the screws and washers used will not penetrate the ETK printed circuit board.

CAUTION!

Potential equalization in the vehicle over the shield of the Ethernet connecting cables of modules may occur!
Mount the modules only to components with the same electrical potential or insulate the modules from the components.

1.2 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. 1-2 WEEE-Symbol

The WEEE symbol (see Fig. 1-2 on page 8) on the product or its packaging shows that the product must not be disposed of as residual garbage.

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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 (see chapter 8 on page 41).

1.3 About this Manual

This manual describes the startup and technical data of the ETKS3.0 module.

1.3.1 Structure

This manual consists of nine chapters and an index.

- **Chapter 1: “General Information”**

  The “General Information” (this chapter) provides you with information on the basic safety instructions, returning the product and recycling, and how to use this manual.

- **Chapter 2: "Introduction"**

  The chapter "Introduction" contains information about the basic features and applications of the ETKS3.0 Interface Board.

- **Chapter 3: “Hardware Description”**

  In the "Hardware Description" chapter the function blocks and the interfaces of the ETKS3.0 are explained in detail.

- **Chapter 4: “Installation”**

  The “Installation” chapter describes the hardware installation of the ETKS3.0.

- **Chapter 5: “Technical Data”**

  The “Technical Data” chapter contains a summary of all technical data, pin assignments and hints to system requirements for operating the ETKS3.0.

- **Chapter 6: “Cables and Accessories”**

  The “Cables and Accessories” chapter contains an overview of the available cables and accessories.

- **Chapter 7: “Ordering Information”**

  The “Ordering Information” chapter contains the ordering information on the available cables and accessories.

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The final chapter, "ETAS Contacts", gives you information on ETAS' international sales and service locations.

1.3.2 Using this Manual

Representation of Information

All activities to be executed by the user are presented in what is referred to as a "Use-Case" format. I.e. the aim is defined in brief as a title and the relevant steps necessary to achieve this aim are then listed. The information is displayed as follows:

Target definition:

Any introductory information...

- Step 1

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

  Possibly an explanation of step 2...
- Step 3

  Possibly an explanation of step 3...

Any concluding remarks...

Typographic Conventions

The following typographic conventions are used:

Click **OK**.	Buttons are shown in boldface.
Press <ENTER>.	Keyboard commands are shown in angled brackets in block capitals.
The "Open File" dialog box appears.	Names of software windows, dialog boxes, fields etc. are shown in quotation marks.
Bold	Device labels
Italics	Crucial text

Important notes for the user are shown as follows:

Note

Important note for the user.

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2 Introduction

This section contains information about the basic features and applications of the ETKS3.0 ETK Interface Board (ETK = Emulator Test Probe), and information on system requirements.

2.1 Applications

The ETKS3.0 is an emulator probe for ECU's with a Nexus debug interface that runs at 3,3 V or below. The ETKS3.0 provides high speed connectivity to the microcontroller of the ECU via the Nexus debug interface by using the capabilities and resources built into the microcontroller.

Note

The ETKS3.0 can be shipped in two different mechanical versions (refer to chapter 5.8 and to chapter 7.1).

The ETKS3.0 is compatible with the ETAS calibration and development system interfaces (e.g. ES590, ES591, ES690, ES910 and ES1000.2/ES1000.3 with ES1232-A). Earlier systems (e.g. MAC2, ES1000.1 with ES1201 board) are not supported.

2.2 Features

- Compliant with IEEE-ISTO 5001™ - 2003 Nexus standard
- Selectable 3.3 V, 2.5 V and 1.8 V ECU interface voltage levels
- Selectable ECU clock speed: 20 MHz or 30 MHz
- Microcontroller capabilities of internal Flash emulation can be used
- Hardware arbitration for simultaneous connection of 3rd party debugging hardware or rapid prototyping hardware
- 2nd Nexus compliant Glenair connector for external debug hardware
- Serial interface with 100 MBit/s for application system
- Permanent storage of ETK configuration in EEPROM
- Coldstart/quick start functionality is supported
- Firmware update (programming of logic devices) through software; removal of ETK or ECU not necessary
- Robust connection to ECU via Nexus compliant Glenair connector
- Mounting possibilities inside ECU or external to ECU

For more technical data on the ETKS3.0 refer to chapter "Technical Data" on page 21.

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2.3 Further Information

For further informations, e.g. integration details, please contact your local ETAS sales and service teams.

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3 Hardware Description

In this chapter, the function blocks of the ETKS3.0 hardware are explained in detail.

3.1 Architecture

Fig. 3-1 on page 13 shows the block diagram which illustrates the ETKS3.0 functional blocks. For a more detailed description of the ETKS3.0, the user is referred to the following chapters:

- ECU interface see section 3.2 on page 14
- Debug interface, see section 3.3 on page 14
- Serial ETK interface see section 3.4 on page 15
- System RAM see section 3.5 on page 15
- Configuration EEPROM see section 3.6 on page 15
- Power supply see section 3.7 on page 16
- ECU voltage supervisor see section 3.8 on page 16
- Status LEDs see section "Status LEDs" on page 17.

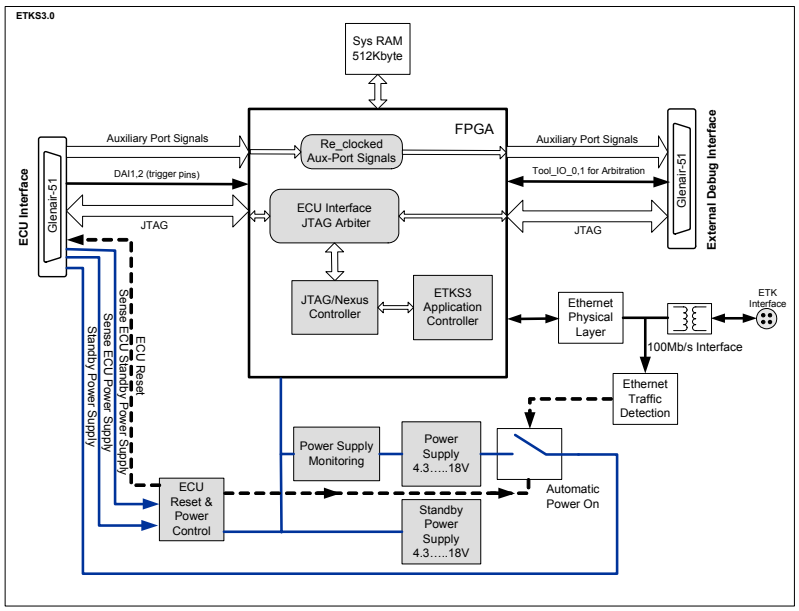


Fig. 3-1 ETKS3.0 Architecture

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3.2 ECU Interface

The ETKS3.0 is connected to the ECU via a 51 pin Glenair connector. The pin assignment for the 51 pin Glenair is compatible with the IEEE-ISTO 5001™ - 2003 Nexus specification. See Tab. 5-1 on page 32 for details of the 51 pin Glenair connector pin assignments.

The ECU interface consists of

- 2 ECU voltage lines, which are used for the detection of the ECU status. These voltage lines are not used for the ETK power supply, therefore the power consumption on these lines is negligible (for a more detailed description the user is referred to section 3.7 on page 16)
- 2 Data Acquisition Interrupt lines (DAI lines) which are used for ETK recognition at startup and for Data Acquisition
- 1 Reset line which allows the ETK to control the system reset of the ECU
- 5 JTAG lines for the communication between the ETKS3.0 and the microcontroller
- Up to 12 debug interface output lines for the communication from the microcontroller to the debugger
- 19 ground lines for a proper shielding of the ECU interface lines

Note

Pin 50 is designated in the IEEE-ISTO 5001™ - 2003 Nexus specification as a ground pin. Pin 50 is used by the ETKS3.0 as a watch-dog timer disable.

3.3 Debug Interface

The ETKS3.0 features a Nexus debug interface connector (Glenair 51 pin). This connector can be used to attach debug and trace tools (e.g. Lauterbach debugger for MPC55xx - LA7610).

The pin assignment for the 51 pin Glenair connector is compatible with the IEEE-ISTO 5001™ - 2003 Nexus specification. Tab. 5-2 on page 34 shows details of the Nexus debug interface connector pin assignments.

The debug interface consists of

- 1 Reset line which allows the debugger to control the system reset of the ECU
- 5 JTAG hardware arbitrated lines for the communication between the microcontroller and the debugger

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- Up to12 debug interface output lines for the communication from the microcontroller to the debugger
- 2 signal lines to the attached debugger hardware for arbitration of the Nexus interface
- 19 ground lines for a proper shielding of the ECU interface lines (according to the Nexus specification)s.

Note

Pin 50 is designated in the IEEE-ISTO 5001™ - 2003 Nexus specification as a ground pin. Pin 50 is used by the debugger as an ETK detection / watch-dog time disable signal.

3.4 Serial ETK Interface

The ETKS3.0 serial interface creates the link to the measurement and calibration system. This interface utilizes a 100BASE-TX transmission to achieve a transmission performance of 100 MBit/s.

3.5 System RAM

Note

The system RAM is neither visible for the ECU nor for the software user. It is reserved for internal use of the ETKS3.0.

3.6 Configuration EEPROM

The Configuration EEPROM of the ETK is for the permanent storage of ETK-related and project-related data. For example, if the MCU is capable of internal flash emulation, the emulation parameters are stored in the Configuration EEPROM. Generating a valid configuration data set is supported by the "ETK-Configuration-Tool". The "ETK-Configuration-Tool" contains information on all available ETKs. The user of the "ETK-Configuration-Tool" is supported by a graphical interface.

If an ECU description database (ASAM-MCD-2MC) with the corresponding input exists, this information can be downloaded from the database. If necessary, a plausibility check is performed.

The "ETK-Configuration-Tool" can create the following output:

1. Direct ETK configuration
2. Storage of the configuration in a data file.

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3.7 Power Supply

The ETKS3.0 is powered directly from the ECU permanent power supply (typically vehicle battery) via the ECU side Nexus Glenair connector (see connector specification J100 in section 5.9.2 on page 30.

The input voltage can vary from 4,3 V to 18 V. In case of higher input voltages to the ETK, an additional voltage converter is required. The required ETK-voltages are generated by a switching power supply which minimizes heat build-up and power consumption. As long as the ECU permanent power supply is used, the power supply of the ECU is not affected by the ETKS3.0. An automatic power save mode ensures that the power consumption during standby is reduced considerably. See power supply specification details in section 5.5 on page 22.

3.8 ECU Voltage Supervisor

The ECU voltage (USG or Ignition) is monitored by the ETKS3.0 to recognize whether the ECU is switched on or off. Additionally the ECU RAM standby voltage (USG* or standby) is monitored to determine if the CAL RAM content is still valid. These two signals are only used for monitoring therefore the load current is negligible.

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3.9 Status LEDs

There are three LEDs displaying the operating status of the ETKS3.0 (Fig. 3-2 on page 17).

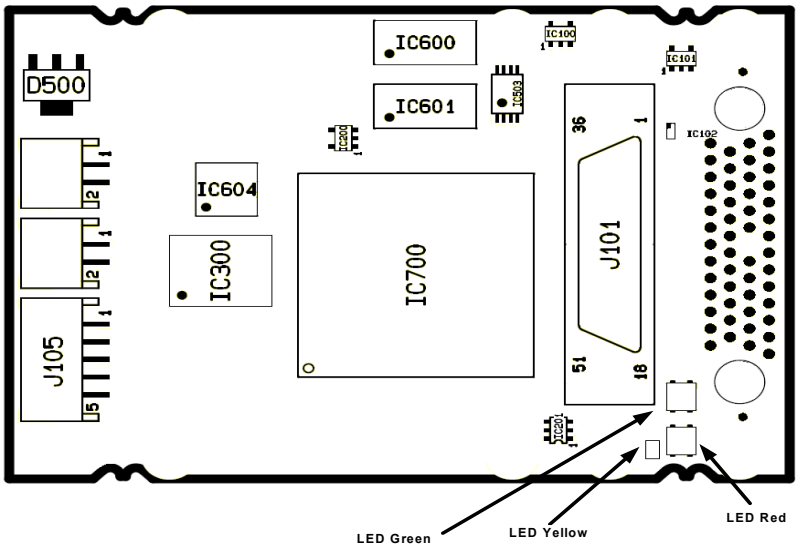


Fig. 3-2 Location of status LEDs

LED	State	Definition
Red	On	ETKS3.0 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 ETKS3.0)

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LED	State	Definition
Green	Off	Working Page contains valid data and is accessible from INCA
	Flashing	ETKS3.0 is in boot configuration mode: - measurement and calibration are not possible, - after first initialization with INCA flashing stops
	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 ETKS3.0 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	On	100 Mbit/s communication to calibration system established

3.10 Reset

The requirement for ETK reset mechanism is to ensure that power-up and power-down behavior of ECU is clean and smooth. The ETKS3.0 normally drives reset low at initialization of the Nexus port during ECU power up or upon a detection of a RESETin (low) caused by the ECU or another tool. The signal RESETout of the microprocessor is not used by the ETKS3.0.

The ETKS3.0 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 ETK to enter the power save mode with the CAL tool (ES590/ES591) unplugged.

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4 Installation

In this chapter, the hardware installation of the ETKS3.0 is described.



CAUTION!

The ETK 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 work place that is protected against static discharge.

4.1 Connection to the ECU and to the Debugger

The ETKS3.0 is connected to the ECU and the debugger via Nexus specified 51 pin Glenair connectors. The ETKS3.0 can be purchased without or with a ruggedized housing.

4.1.1 ETKS3.0 without a ruggedized housing

When purchased without a housing, the ETKS3.0 is mounted inside the ECU.



WARNING!

Risk of short circuiting to internal power signals of the ETKS3.0.
When you mount the ETKS3.0 ***without*** *ruggedized housing to the ECU, you must make sure that the screws and washers used will not penetrate the ETKS3.0 printed circuit board.*

4.1.2 ETKS3.0 with a ruggedized housing

When purchased with a housing, the ETK is mounted external to the ECU. Fig. 4-1 on page 20 illustrates the connectivity between the ECU, the ETKS3.0, and a debugger.

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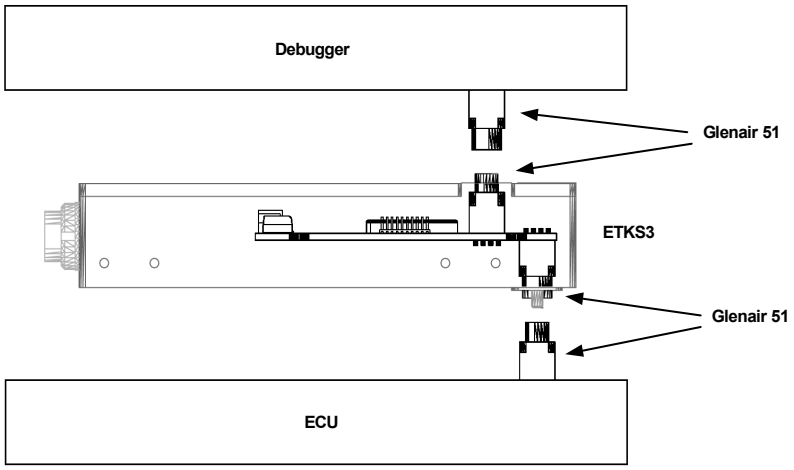


Fig. 4-1 ETKS3.0 Hardware Configuration

Please see section 5.8 on page 25 for dimensional/mechanical information.

4.2 Connecting to the Power Supply

The ETKS3.0 needs a permanent power supply (refer chapter "Power Supply" on page 16). It is powered directly from the ECU permanent power supply (typically vehicle battery) via the ECU side Nexus Glenair connector.

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5 Technical Data

5.1 System Requirements

5.1.1 ETAS Hardware

VME Hardware: ES1000.2/ES1000.3 with ES1232 (INCA/ASCET)

Compact Hardware: ES590, ES591, ES690 (INCA)

Compact Hardware: ES910 (INTECRIO)

5.1.2 Software Support

You need following software versions to support the ETKS3.0:

Microcontroller	HSP	INCA	ASCET-RP	INTECRIO
MPC5553, MPC5554, MPC5565, MPC5566, MPC5674F	V5.0	V5.4	V5.4.1	V2.0

Operating the ETKS3.0 with older software versions is not possible.

5.2 Environmental Conditions

Item	Characteristics
Temperature range	- 40 °C to + 110 °C - 40 °F to + 230 °F

5.3 Microcontroller Interface

Item	Characteristics
Supported Microcontrollers	Freescale MPC5553, MPC5554, MPC5565, MPC5566, and MPC5674F

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5.4 Serial ETK Interface

Item	Characteristics
Transmission performance	100 MBit/s
Cable length	max. 30 m / 100 ft
Serial Interface	DC decoupling

5.5 Power Supply

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Permanent Power Supply from car battery	U_{Batt}		4.3	12	18	V
Standby Current	I_{STBY}	U_{Batt1} = 12 V; ECU off; T = 20 °C		15	20	mA
Supply Current	I_{Batt}	U_{Batt1} = 12 V; ECU on; T = 20 °C		100		mA

Parameter	Symbol	Nominal	off → on threshold	on → off threshold
Power Supply from ECU (sense)	VREF	3.3 V 2.5 V 1.8 V	2.60 V 2.02 V 1.43 V	2.53 V 1.93 V 1.34 V
Permanent Power Supply from ECU (sense)	VSTBY	3.3 V 2.5 V 1.8 V 1.5 V 1.0 V	2.83 V 2.12 V 1.56 V 1.30 V 0.88 V	2.75 V 2.03 V 1.47 V 1.22 V 0.80 V

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5.6 ECU Interface DC Operating Conditions

5.6.1 J100 Connector Input Pins

Type	Parameter	Conditions	Min	Max
MDO[11..0], MCKO, MSE[1..0], /EVTO, TDO, /RDY	V_{IH} V_{IL}		1.17 V -0.3 V	4.0 V 0.5 V
/RDY, TDO (ETK Debugger port input buffer only)	V_{IH} V_{IL}		1.7 V -0.5 V	3.5 V 0.7 V
TOOL_IO[1..0], /RSTOUT, /RSTIN	V_{IH} V_{IL}		1.7 V -0.5 V	5.1 V 0.7 V

5.6.2 J100 Connector Output Pins

Type	Parameter	Conditions	Min	Max
TCK, TDI, TMS, /TRST, /EVTI, WDT	V_{OH} = 3.3V V_{OL} = 3.3V	I_{OH} = -24 mA I_{OL} = 24 mA	2.4 V	0.45 V
TCK, TDI, TMS, /TRST, /EVTI	V_{OH} = 2.5V V_{OL} = 2.5V	I_{OH} = -16 mA I_{OL} = 16 mA	2.0 V	0.7 V
TCK, TDI, TMS, /TRST, /EVTI	V_{OH} = 1.8V V_{OL} = 1.8V	I_{OH} = -12 mA I_{OL} = 12 mA	1.35 V	0.45 V

Note

/reset: Open Drain FET; I_{Dmax} = 0.2 A

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5.7 Debug Interface Operating Conditions

5.7.1 J101 Connector Input Pins

Type	Parameter	Conditions	Min	Max
TOOL_IO0, WDT_DET, /EVTI, TCK, TMS, TDI, TRST, / EVTI	V_{IH}		1.7 V	4.1 V
	V_{IL}		-0.5 V	0.7 V

5.7.2 J101 Connector Output Pins

Type	Parameter	Conditions	Min	Max
MDO[11..0], MCKO, MSE[1..0], / EVTO, VREF, TOOL_IO1,	V_{OH} = 3.3 V	I_{OH} = -24 mA	2.4 V	
	V_{OL} = 3.3 V	I_{OL} = 24 mA		0.45 V
/RDY, TDO (ETK Debugger port output buffer)	V_{OH} = 2.5 V	I_{OH} = -200 µA	2.0 V	
	V_{OL} = 2.5 V	I_{OL} = 200 µA		0.2 V
/RSTOUT, /RSTIN (signals driven directly by ECU)	V_{OH}			5.1 V
	V_{OL}			0.7 V

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5.8 Mechanical Dimensions

Note

The ETKS3.0 can be shipped in two different mechanical versions (refer to chapter 7.1 on page 39).

5.8.1 ETKS3.0

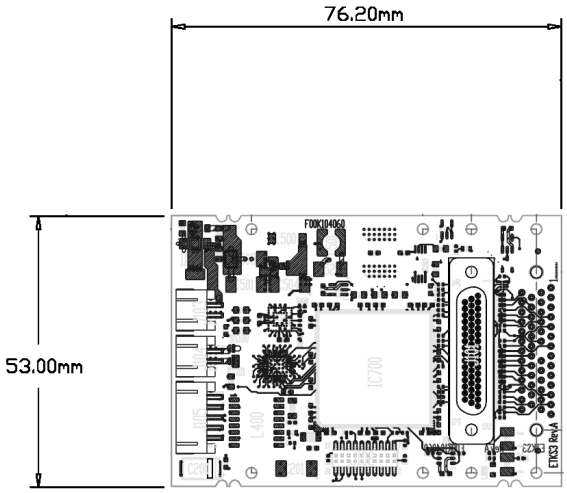


Fig. 5-1 ETKS3.0 Dimensions - Top View

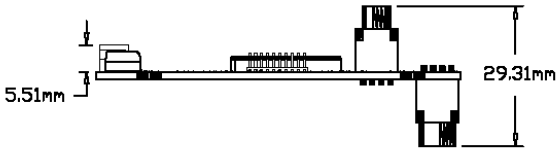


Fig. 5-2 ETKS3.0 Dimensions - Side View

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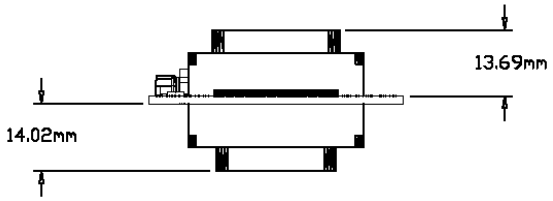


Fig. 5-3 ETKS3.0 Dimensions - End View

Dimensions	Millimeters	Inches
Length	76.20	3.000
Width	53.00	2.087
Height	max. 29.31	max. 1.154
Thickness of PCB	max. 1.7	max. 0.067
Height of components (upper side)	max. 5.51	max. 0.217
Height of components (lower side)	max. 2.0	max. 0.079

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5.8.2 ETKS3.0_SET

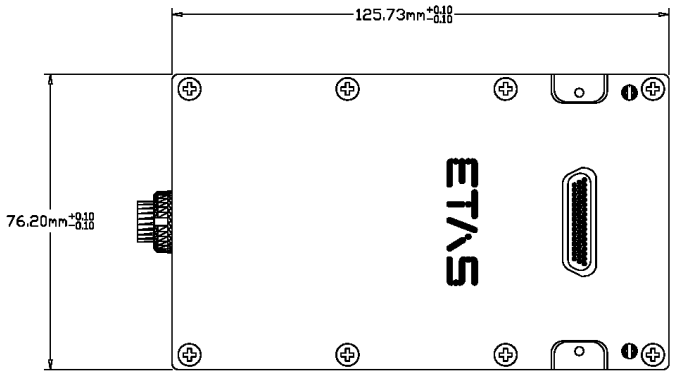


Fig. 5-4 ETKS3.0_SET Dimensions - Top View, no Glenair Cover

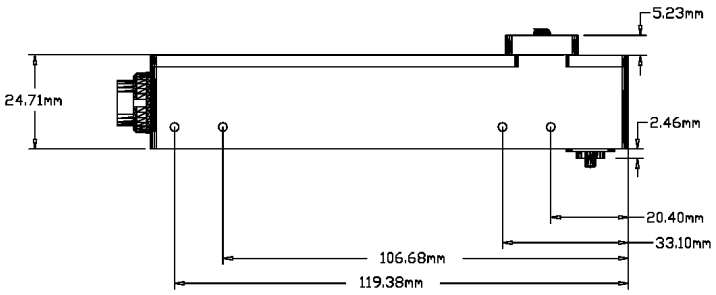


Fig. 5-5 ETKS3.0_SET Dimensions - Side View with Glenair Cover

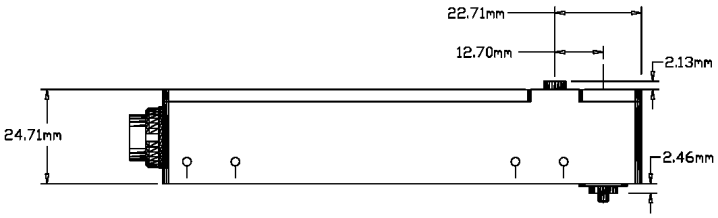


Fig. 5-6 ETKS3.0_SET Dimensions - Side View, no Glenair Cover

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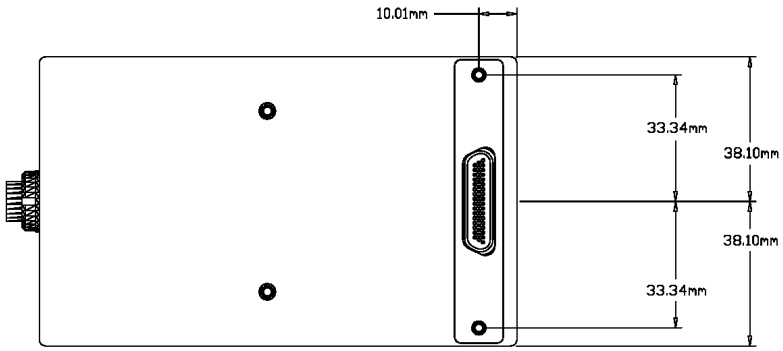


Fig. 5-7 ETKS3.0_SET Dimensions - Bottom View

Dimensions	Millimeters	Inches
Length	125.73	4.95
Width	76.2	3.00
Thickness of Case	24.71	0.973
Glenair protrusion ECU side	Nom. 2.46	Nom. 0.0969
Glenair protrusion debugger side)	Nom. 2.13	Nom. 0.0839

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5.9 Interface Connectors

5.9.1 Connector Layout

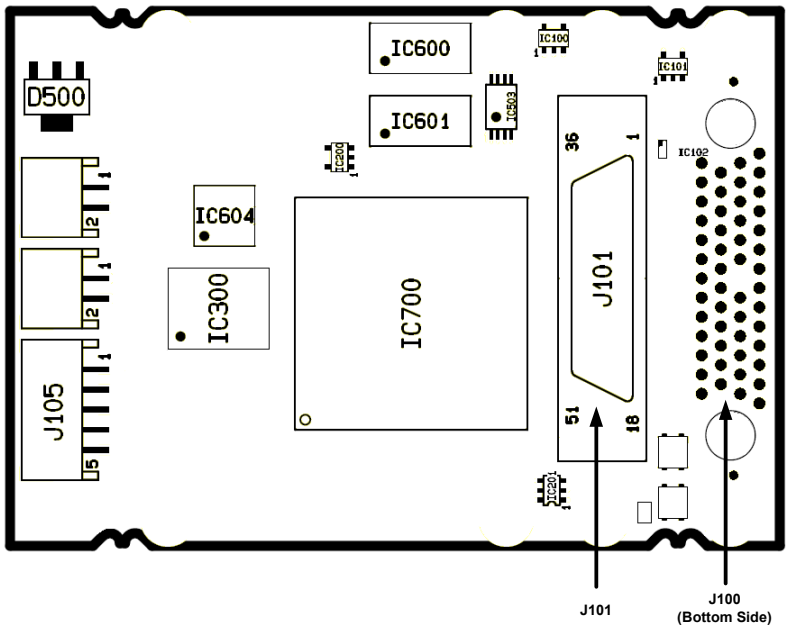


Fig. 5-8 ETKS3.0 Connector Layout

Connector	Interface
J100	ECU
J101	Debugger

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Fig. 5-9 ETKS3.0_SET Connector Layout (Side View)

Connector	Interface
J100 - Glenair MR7580-51S-1BNU	ECU
J101 - Glenair MR7580-51P-1BNU	Debugger

5.9.2 ECU Interface Connector J100 Pinout

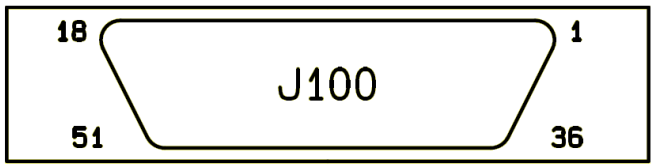


Fig. 5-10 ECU Interface Connector Pinout, View to Pins

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ETK J100 Pin #	Signal	Description	Direction
1	UBATT	Battery Supply Voltage (12V Nominal)	I
2	UBATT	Battery Supply Voltage (12V Nominal)	I
3	VSTBY	Permanent ECU Power Supply	I (Sense)
4	TOOLIO0	Tool IO Bit 0 - DAI1 (trigger)	I/O
5	TDO	Test Data Output	I
6	RDY	Ready Signal	I
7	/reset	ECU Reset	I/O
8	VREF	Switched ECU power supply (3.3V Max)	I (Sense)
9	/EVTI	Event in	O
10	Gnd	Ground	Gnd
11	JCOMP	enables the TAP controller	O
12	Gnd	Ground	Gnd
13	TMS	controls test mode	O
14	Gnd	Ground	Gnd
15	TDI	Test Data Input	O
16	Gnd	Ground	Gnd
17	TCK	Clock input to the TAP controller in uC	O
18	Gnd	Ground	Gnd
19	MDO0	Message Data Out Bit 0	I
20	Gnd	Ground	Gnd
21	MCKO	Message Clock Out	I
22	Gnd	Ground	Gnd
23	/EVTO	Event Out	I
24	Gnd	Ground	Gnd
25	MSEO0	Message Start/End Out Bit 0	I
26	MDO9	Message Data Out Bit 9	I/O
27	MDO1	Message Data Out Bit 1	I
28	Gnd	Ground	Gnd

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ETK J100 Pin #	Signal	Description	Direction
29	MDO2	Message Data Out Bit 2	I
30	Gnd	Ground	Gnd
31	MDO3	Message Data Out Bit 3	I
32	Gnd	Ground	Gnd
33	TOOLIO1	Tool IO Bit 1 - DAI2 (trigger)	I
34	Gnd	Ground	Gnd
35	/MSEO1	Message Start/End Out Bit 1	I
36	Gnd	Ground	Gnd
37	MDO4	Message Data Out Bit 4	I
38	Gnd	Ground	Gnd
39	MDO5	Message Data Out Bit 5	I
40	Gnd	Ground	Gnd
41	MDO6	Message Data Out Bit 6	I
42	Gnd	Ground	Gnd
43	MDO7	Message Data Out Bit 7	I
44	Gnd	Ground	Gnd
45	MDO8	Message Data Out Bit 8	I
46	Gnd	Ground	Gnd
47	MDO10	Message Data Out Bit 10	I
48	Gnd	Ground	Gnd
49	MDO11	Message Data Out Bit 11	I
50	WDT	Watch Dog Disable signal	O
51	/RESETo	Reset signal out	I

Tab. 5-1 ECU Interface Connector Pin Description

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5.9.3 Debug Interface Connector J101 Pinout

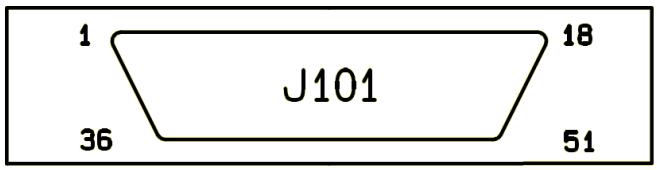


Fig. 5-11 Debug Interface Connector Pinout, View to Pins

ETK J101 Pin #	Signal	Description	Direction
1	UBATT	Battery Supply Voltage (12V Nominal)	O
2	UBATT	Battery Supply Voltage (12V Nominal)	O
3	VSTBY	Permanent ECU Power Supply	O (sense)
4	TOOLIO0	Tool IO Bit 0 - Debugger /BUSREQ	I
5	TDO	Test Data Output	O
6	RDY	Ready Signal	O
7	/reset	ECU Reset (Directly from ECU)	I/O
8	VREF	Switched ECU power supply	O (sense)
9	/EVTI	Event in	I
10	Gnd	Ground	Gnd
11	JCOMP	enables the TAP controller	I
12	Gnd	Ground	Gnd
13	TMS	controls test mode	I
14	Gnd	Ground	Gnd
15	TDI	Test Data Input	I
16	Gnd	Ground	Gnd
17	TCK	Clock input to the TAP controller in uC	I
18	Gnd	Ground	Gnd
19	MDO0	Message Data Out Bit 0	O
20	Gnd	Ground	Gnd
21	MCKO	Message Clock Out	O
22	Gnd	Ground	Gnd
23	/EVTO	Event Out	O

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ETK J101 Pin #	Signal	Description	Direction
24	Gnd	Ground	Gnd
25	MSEO0	Message Start/End Out Bit 0	O
26	MDO9	Message Data Out Bit 9	O
27	MDO1	Message Data Out Bit 1	O
28	Gnd	Ground	Gnd
29	MDO2	Message Data Out Bit 2	O
30	Gnd	Ground	Gnd
31	MDO3	Message Data Out Bit 3	O
32	Gnd	Ground	Gnd
33	TOOLIO1	Tool IO Bit 1 - Debugger /BUSGRANT	O
34	Gnd	Ground	Gnd
35	/MSEO1	Message Start/End Out Bit 1	O
36	Gnd	Ground	Gnd
37	MDO4	Message Data Out Bit 4	O
38	Gnd	Ground	Gnd
39	MDO5	Message Data Out Bit 5	O
40	Gnd	Ground	Gnd
41	MDO6	Message Data Out Bit 6	O
42	Gnd	Ground	Gnd
43	MDO7	Message Data Out Bit 7	O
44	Gnd	Ground	Gnd
45	MDO8	Message Data Out Bit 8	O
46	Gnd	Ground	Gnd
47	MDO10	Message Data Out Bit 10	O
48	Gnd	Ground	Gnd
49	MDO11	Message Data Out Bit 11	O
50	/CON	ETK detection pin	I
51	/RESETo	Reset out signal from uC	O

Tab. 5-2 Debug Interface Connector Pin Description

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6 Cables

6.1 ETK Interface Cable KA54 (with PG Cable Gland)

Note

Cable glands are not included in the delivery. Refer to the cable descriptions for manufacturers and order numbers.

6.1.1 ETK Interface Cable KA54, Proposal 1

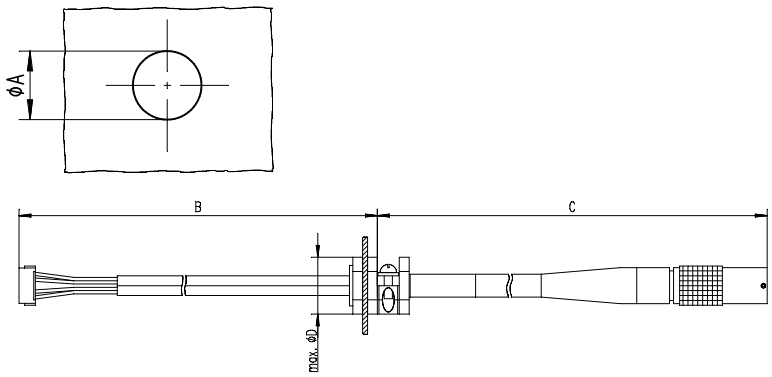


Fig. 6-1 ETK Interface Cable KA54, Proposal 1

Dim	Millimeters	Inches	Dim	Millimeters	Inches
A	12.50	0.492	**C**	400.00	15.748
B	160.00	6.299	**D**	19.00	0.748

Note

The cable shield is electrically connected to the ECU housing.

***SKINDICHT** compact screwing; **Manufacturer**: Lapp; **Description**: SH7; **Order-No.**: 5200 0830*

*Nut for compact screwing; **Manufacturer:** Lapp; **Description:** SM7; **Order-No.:** 5200 3490*

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6.1.2 ETK Interface Cable KA54, Proposal 2

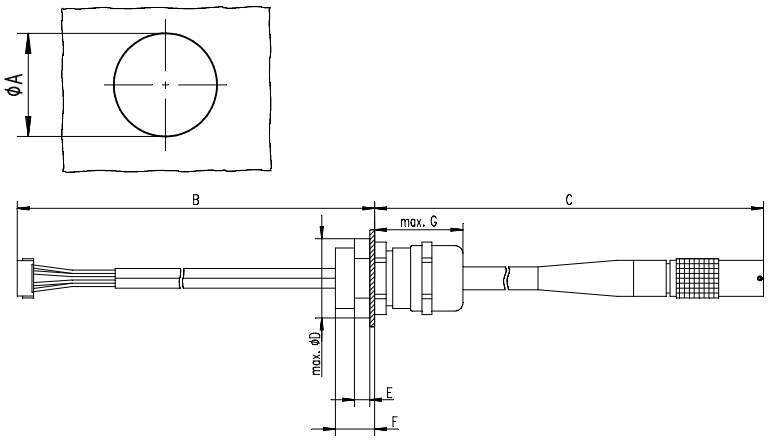


Fig. 6-2 ETK Interface Cable KA54, Proposal 2 (long Thread)

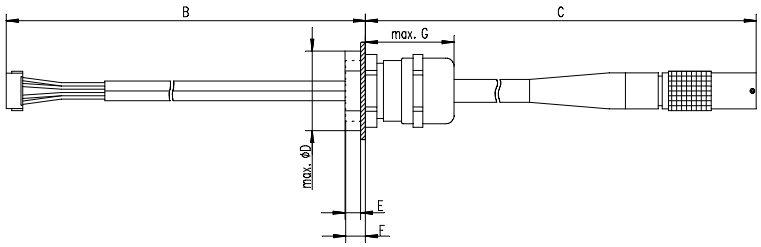


Fig. 6-3 ETK Interface Cable KA54, Proposal 2 (short Thread)

Dim	Millimeters	Inches	Dim	Millimeters	Inches
A	18.80	0.740	**E**	4.70	0.185
B	160.00	6.299	$\mathbf{F}_{Long}$	12.00	0.472
C	400.00	15.748	$\mathbf{F}_{Short}$	6.00	0.263
D	24.25	0.955	**G**	27.00	1.063

Note

The cable shield is electrically connected to the ECU housing.

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SKINTOP *compact screwing;* ***Manufacturer:*** *Lapp;* ***Description:*** *MS-SC 11 ;* ***Order-No.:*** *5311 2320 (long thread) or 5311 2220 (short thread)*

Nut for compact screwing; ***Manufacturer:*** *Lapp;* ***Description:*** *SM-PE 11 ;* ***Order-No.:*** *5210 3220*

6.2 ETK Interface Cable KA55

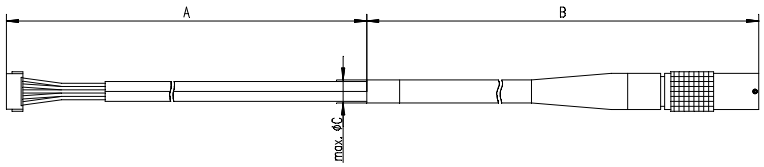


Fig. 6-4 ETK Interface Cable KA55

Dim	Millimeters	Inches
A	160.00	6.299
B	400.00	15.748
C	7.50	0.295

Note

Strain relief on ECU cover is necessary. The cable shield is not electrically connected to the ECU housing.

6.3 ETK Interface Cable CBAM200

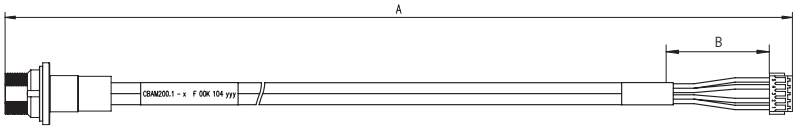


Fig. 6-5 ETK Interface Cable CBAM200-0m38

Dim	Millimeters	Inches
A	380.00	14.96
B	30.00	1.18

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Note

The cable shield is electrically connected to the ECU housing, allows for ECU housing flush mounting.

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7 Ordering Information

7.1 ETKS3.0

Type	Order-No.	Note
ETKS3.0	F 00K 104 060	ETKS3.0 for Freescale MPC5553, MPC5554, MPC5565, MPC5566, and MPC5674F
ETKS3.0_SET	F 00K 104 304	ETKS3.0 for Freescale MPC5553, MPC5554, MPC5565, MPC5566, and MPC5674F, mounted in robust housing

7.2 Cables

7.2.1 ETK Interface Cables

Order Name	Short Name	Order Number
ETK ECU Adapter Cable, Shield on ECU-Housing, Lemo 1B PHG JST PHR (4fc-5fc), 0m6 [1)]	KA54	F 00K 001 302
ETK ECU Adapter Cable, Lemo 1B PHG JST PHR (4fc-5fc), 0m6 [2)]	KA55	F 00K 001 303

[1)]: ETK grounded via ECU housing
[1)]: ETK grounded via cable

7.2.2 Power Supply Cable

Order Name	Short Name	Order Number
Cable JST PHR - JST PHR (2fc-3fc), 0m1	CBM200-0m1	F 00K 900 052

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7.3 Strain Relief Hardware

Type	Order-No.	Note
Strain Relief Clamp	52000830	
Nut for Strain relief	52003490	
Strain Relief Clamp	53112320	Long Thread
Strain Relief Clamp	53112220	Short Thread
Nut for Strain relief	52103220	

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8 ETAS Contact Addresses

ETAS HQ

ETAS GmbH

Borsigstraße 14	Phone:	+49 711 89661-0
70469 Stuttgart	Fax:	+49 711 89661-106
Germany	WWW:	www.etas.com

ETAS Subsidiaries and Technical Support

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

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

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Fig. 6-5 ETK Interface Cable CBAM200-0m38 37

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