

Product:	ETK-S21.1	Rev :	16	Page 1 of 10
Title :	Release-Notes			

DRIVING EMBEDDED EXCELLENCE



Product :	ETK-S21.1A			
Title :	Release Notes			
File :	ETK-S21.1_Release-Notes_V16.docx			
TTNR :	F-00K-109-140			
Comments :	<p>Currently shipped for ETK-Mode: 337279B010/01 EPLD version: V33 FPGA-Boot version: V72 FPGA-A version: V79 Hardware-state: B010/01</p> <p>Currently shipped for FETK-Mode: 33140250B010/01 EPLD version: V33 FPGA-Boot version: V1.4.0 FPGA-A version: V2.5.0 Hardware-state: B010/01</p>			
Created:	Name R. Mai	Department PGA/PRM-M2	Signature R. Mai	Date 2018-09-11
Released:	Name A. Sprenger	Department NE/PJM	Signature A. Sprenger	Date 2018-09-11

C h a n g e s

Revision	Description	Date	Name	Signature
01	114550B010/01 for ETK-S21.1A - Initial version	2013-09-12	Mai	Mai
02	114552B010/01 - new μ C support [chapter 2.4]	2013-11-20	Spr	Spr
03	114552B010/01 - generic μ C support and JDP errata added [chapter 2.4 & 3.2]	2014-03-14	Mai	Mai
04	114553B010/01 – new FPGA Update [chapter 3.1 & 5.4]	2014-05-19	Mai	Mai
05	114554B010/01 – new FPGA Update [chapter 3.1 & 5.4]	2014-06-24	Spr	Spr
06	114555B010/01 – new FPGA Update [chapter 3.1 & 5.4]	2014-07-28	Mai	Mai
07	114561B010/01 – new FPGA Update [chapter 3.1 & 5.4]	2014-12-05	Mai	Mai

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08	337174B010/01 33160120B010/01 – new FPGA Update [chapter 3.1 & 5.4]	2014-06-30	Mai	Mai
09	337275B010/01 33130190B010/01 – new FPGA Update [chapter 3.1 & 5.4]	2015-09-29	Khm	Khm
10	337278B010/01 33130190B010/01 – new FPGA Update [chapter 3.1 & 5.4]	2016-04-19	Mai	Mai
11	337278B010/01 – FW/SW Update for MCE V2 and SW 33130190B010/01 debug arbitration [chapter 3.1]	2016-06-22	Mai	Mai
12	337278B010/01 331301150B010/01 – Bug fix [chapter 3.1 & 5.6]	2016-09-14	Mai	Mai
13	337278B010/01 – Bug fix & LFAST support 33130200B010/01 [chapter 3.1 & 5.6]	2016-10-17	Mai	Mai
14	337279B010/01 – Bug fix & LFAST support 33140220B010/01 [chapter 3.1 & 5.6]	2016-12-16	Spr	Spr
15	337279B010/01 – Bug fix 33140240B010/01 [chapter 3.1 & 5.6]	2017-03-07	Mai	Mai
16	337279B010/01 – Bug fix 33140240B010/01 [chapter 3.1 & 5.6]	2018-09-11	Mai	Mai

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1 General Information

1.1 Safety Notice

Calibration activities influence the behavior of the ECU and the systems controlled by the ECU. This may result in unexpected behavior of the vehicle and thus can lead to safety critical situations. Only well trained personnel should be allowed to perform calibration activities.

1.2 System Requirements

The following minimum system prerequisites have to be met:

Required Hardware

- 2 GHz Processor
- 2 GB RAM
- DVD-ROM drive (for installation)
- Network adapter
- Graphics with a resolution of at least 1024x768, 256MB RAM, 16bit color and DirectX 9

Required Operating System

- Windows® XP SP3 (32bit) or higher,
- Windows® Vista SP1 (32bit) or higher,
- Windows® 7 SP1 (32 or 64bit*) or higher.
- Windows 8 (32 / 64 bit*)

*) INCA uses the 32bit compatibility mode on a 64-bit operating system.

Required Free Disk Space

- 250 MB (not including the size for application data)

The following system prerequisites are recommended:

Recommended Hardware

- 3 GHz Quad-Core Processor or equivalent
- 4 GB RAM
- DVD-ROM drive (for installation)
- Network adapter
- Graphics with a resolution of at least 1280 x 1024, 1GB RAM, 32bit color and DirectX 9

Recommended Operating System

- Windows® 7 SP1 64bit (INCA uses the 32bit compatibility mode on a 64-bit operating system)

Recommended Free Disk Space

- >500 MB

1.3 Restrictions

WINDOWS® 95b, WINDOWS® NT, WINDOWS® 2000 and WINDOWS® 98SE are not supported

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1.4 Miscellaneous

To ensure the highest data throughput from the ETK device up to the PC system no other PC software should be run via this Ethernet adapter.

2 Version Syntax and Tool-Chain Information

2.1 Version-Syntax of the ETK-S21.1A

The **ETK-S21.1A hardware version** information is located on the product sticker and can be read out of the ETK using the firmware update tool HSP or XETK Configuration Tool.

Overall Hardware Version Syntax: **aabbccdeee/ff**

Description of PLD-Code Information (modification details refer chapter 3)

ETK-Mode:

- aa** EPLD-Code version (11, 12, 13, ...)
- bb** FPGA-Boot-Code version (11, 12, 13, ...)
- cc** FPGA-Code version (11, 12, 13, ...)

FETK-Mode:

- aa** EPLD-Code version (11, 12, 13, ...)
- bbb** FPGA-Boot-Code version (11, 12, 13, ...)
- ccc** FPGA-Code version (11, 12, 13, ...)

The hardware version of the PCB is also located on the label attached to the PCBs. These version is subordinate to the Overall hardware state cannot be read out by software.

PCB Hardware State Syntax: **deee/ff**

Description of Hardware-Information (modification details refer chapter 4)

- d** PCB Version (A=V1.0, B=V1.1, C=V1.2, ...)
- eee** PCB Hardware State (010, 011, 012, ...)
- ff** PCB Population Variant (00, 01, 02, ...)

The first delivered hardware state of the ETK-S21.1A is the following:

ETK-Mode: ETK-S21.1A: **337275B010/01**

FETK-Mode: ETK-S21.1A: **33130190B010/01**

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2.2 Version information of the tool-chain components

To get this ETK running with the other components of the tool-chain please make sure that the version mentioned below or a newer one is used. If your software, firmware or hardware version is older, please update it.

If you have any problems to get this ETK running please contact our local customer support or sales representative.

Updates or refreshes can be downloaded from the ETAS homepage:

<http://de.etasgroup.com>

<http://en.etasgroup.com>

2.3 Hardware support

The ETK-S21.1A is supported by ES59x, ES891, ES910 and ES1000.2/3 System with ES1232.

2.4 Software and microcontroller support

Microcontroller	HSP	INCA	ETK Tools	ASCET-RP	INTECRIO
MPC5746M-ED / EMU57EM80xy	V10.2.0	V7.0.0	V3.11.0	V6.1.3	V4.2.0
MPC5746M / SPC57EM80xy	V10.2.0	V7.0.0	V3.11.0	V6.1.3	V4.2.0
MPC5744K-ED / EMU574K72xy	V10.2.0	V7.0.0	V3.11.0	V6.1.3	V4.2.0
MPC5744K / SPC574K72xy	V10.2.0	V7.0.0	V3.11.0	V6.1.3	V4.2.0
MPC5777A-ED / EMU57HM90xy	V10.2.0	V7.0.0	V3.11.0	V6.1.3	V4.2.0
MPC5777A / SPC57HM90xy	V10.2.0	V7.0.0	V3.11.0	V6.1.3	V4.2.0
MPC5746R-ED	V10.3.0	V7.1.3	V3.12.0	V6.1.3	V4.2.0
PPC57xx_Generic_Cfg1	V10.4.0	V7.1.4	V4.0.0	V6.1.3	V4.2.0

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3 What's New - Release Notes

This chapter lists the main improvements compared to a previous shipped ETK product. Additionally a detailed list of already known issues can be found here.

3.1 New or Enhanced Functions

3.1.1 In INCA 7.2.10 and HSP V11.10.0

Issue Identifier	Description
590832	Improve HW configuration process for Brain Dead Flash programming. Support of PROF auto configuration with ETK-S21.1A (in FETK mode)

3.1.2 In INCA 7.2.4 and HSP V11.4.0

Issue Identifier	Description
549866	Calwakeup - when ECU wakes up, measure values are not displayed right away, additional stop/start measurement in INCA necessary
558559	Measurement interruption use cases fail in FETK mode, no ECU access any more after reconnect
n/a	Added extended information for XCP DAQ overload events
n/a	Added support of ECU defined error codes

3.1.3 In INCA 7.2.3 and HSP V11.3.0

Issue Identifier	Description
n/a	Support of reconfigurable size, moveable EMU RAM (LERT V3) in FETK mode
n/a	XCP Debug API: responsive behavior in case of non-existing memory access improved in FETK mode
n/a	Support of IEEE 1588 time synchronization in FETK mode
n/a	Support of SBB V2.1 and SBB V3.1 in FETK mode
540027, 536845	Sporadically flashing programming fails if ETAL 6 Rev. C is connected
545949	Measurement interruption in FETK mode: re-initialization fails, no access ECU anymore, persistent error message is shown in INCA
553146, 551481	Improved stability of ETK-S21 in FETK mode
553705	New FETK boot HDC for production. No functional changes.

3.1.4 In INCA 7.2.2 HF2 and HSP V11.2.1

Issue Identifier	Description
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n/a	Added support of LFAST in FETK mode
n/a	increased performance for debugging over XCP
502023	Support of fast raster use cases
534258	Performance optimization of ETK on ES891. 100µs raster beside other raster is now possible

3.1.5 In INCA 7.2.2 and HSP V11.2.0

Issue Identifier	Description
n/a	enhancement of monitor to log lost measurement data
537202	No measure values via ETK if ES891 is in use

3.1.6 In INCA 7.2.1 and HSP V11.1.0

Issue Identifier	Description
n/a	SW debugger arbitration in FETK modi
n/a	MCE V2 Support in FETK mode

3.1.7 In INCA 7.2.0 and HSP V11.0.1

Issue Identifier	Description
518185	ETK Handshake fails powering ECU and ETK simultaneously on
523056	Update of Dual-mode FW is not possible

3.1.8 In INCA 7.1.10 and HSP V10.10.0

Issue Identifier	Description
476580	MC_WAIT Bit always on
484663, 484664	Calibration under special conditions not working
480157	Added XCP service request "SERV_RESET". Gives the user a hint to reset the ECU if ECU and FETK are powered at the same time.

3.1.9 In INCA 7.1.9 and HSP V10.9.0

Issue Identifier	Description
Call # 461033	LFAST communication instable - interruption after 30Minutes to 3hours
Call # 441601	LFAST - Coldstart testcase: first measured values are always '0'
n/a	Added ES891 and ETAL6 Rev.C support

3.1.10 In INCA 7.1.7 and HSP V10.7.0

Issue Identifier	Description
Call # 433274	ETK-S21 fails to switch JTAG clock to the configured frequency at temperatures below -30°C

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Call # 416222	Increased polling rate of JIN/JOUT register in order to improve handshake
Call # 438230, Call # 438232	Increased handshake register access frequency to meet timeout condition
Call # 441601	First measurement values after coldstart always shows zero
n/a	Added support of the LFAST interface with ETAL6
n/a	ETK-S21 signals LFAST mode during handshake if ETK will switch over to LFAST --> ECU can deactivate SMPU
n/a	Added Support of BIST (Built In Security Test) for MPC5746R-ED

3.1.11 In INCA 7.1.6 and HSP V10.6.0

Issue Identifier	Description
n/a	Added support for DiffJTAG with ETAL6
Call #416222	Increased polling rate of JIN/JOUT register in order to improve handshake

3.1.12 In INCA 7.1.5 and HSP V10.5.0

Issue Identifier	Description
Call #412349	ETK-S21 Flash programming with PPC5777 Cut 2 fails

3.1.13 In INCA 7.1.4 and HSP V10.4.1

Issue Identifier	Description
Call #395066	Trigger polling delayed by one polling cycle (bypass, measurement)
Call #394215	debugger arbitration fails with multiple breakpoints

3.1.14 In INCA 7.1.4 and HSP V10.4.0

Issue Identifier	Description
n/a	Support of new microcontroller: - Generic device "PPC57xx_Generic_Cfg1"

3.1.15 In ETK Drivers & Tools V3.12.0 and HSP V10.3.0

Issue Identifier	Description
n/a	Support of new microcontroller: - FREESCALE MPC5746R-ED
Call 373920	Fixed problem with calibration wake-up when new ES device firmware does not perform a memory access before ECU handshake has completed (race

	condition between two state machines in JTAG controller)
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3.2 Known issues

3.2.1 Microcontroller

Issue Identifier	Description
Errata 4112	Access to the Internal Overlay RAM does not work reliably due to issue (e4112) in MPC5746M, Cut 1

3.2.2 In HSP 11.2.1

Issue Identifier	Description
Call #545949	Known Issue if ETK-S21 is in FETK- and LFAST mode: When ES891 is in standby and wakes up again the ECU isn't accessible. An ECU reset is required to establish communication.
Call #549886	Known Issue for ETK-S21 in FETK-mode: No measurement values displayed when ECU is woken up. Workaround is to re-start measurement again.

3.2.3 In HSP 10.9.1

Issue Identifier	Description
Call #475942	The HSP 10.9.1 supports only one FETK, connected on port FETK1. Nevertheless an FETK, connected on port FETK2 will be displayed with the HSP. Do not update the FETK, connected on port FETK2.

4 Product Variants

In general the ETK-S21.1A can be purchased in one variant.

4.1 ETK-S21.1A

Item number	F-00K-109-140																											
Description	ETK-S21.1A Emulator Probe for the JDP MPC57xx microprocessor family, ECU adaption via 10 SAMTEC 5 pin JST plug, with further adapter.																											
For details refer the datasheet	<table border="1"> <thead> <tr> <th>DIM</th> <th>MILLIMETERS</th> <th>INCHES</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>60.00^{+0.2}_{-0.2}</td> <td>2.362^{+0.008}_{-0.008}</td> </tr> <tr> <td>B</td> <td>56.50^{+0.1}_{-0.1}</td> <td>2.224^{+0.004}_{-0.004}</td> </tr> <tr> <td>C</td> <td>35.00^{+0.2}_{-0.2}</td> <td>1.380^{+0.008}_{-0.008}</td> </tr> <tr> <td>D</td> <td>3.50^{+0.1}_{-0.1}</td> <td>0.138^{+0.004}_{-0.004}</td> </tr> <tr> <td>E</td> <td>3.00^{+0.1}_{-0.1}</td> <td>0.118^{+0.004}_{-0.004}</td> </tr> <tr> <td>F</td> <td>37.00^{+0.1}_{-0.1}</td> <td>1.457^{+0.004}_{-0.004}</td> </tr> <tr> <td>G</td> <td>40.00^{+0.2}_{-0.2}</td> <td>1.575^{+0.008}_{-0.008}</td> </tr> <tr> <td>H</td> <td>2.60^{+0.1}_{-0.0}</td> <td>0.102^{+0.004}_{-0.000}</td> </tr> </tbody> </table>	DIM	MILLIMETERS	INCHES	A	60.00 ^{+0.2} _{-0.2}	2.362 ^{+0.008} _{-0.008}	B	56.50 ^{+0.1} _{-0.1}	2.224 ^{+0.004} _{-0.004}	C	35.00 ^{+0.2} _{-0.2}	1.380 ^{+0.008} _{-0.008}	D	3.50 ^{+0.1} _{-0.1}	0.138 ^{+0.004} _{-0.004}	E	3.00 ^{+0.1} _{-0.1}	0.118 ^{+0.004} _{-0.004}	F	37.00 ^{+0.1} _{-0.1}	1.457 ^{+0.004} _{-0.004}	G	40.00 ^{+0.2} _{-0.2}	1.575 ^{+0.008} _{-0.008}	H	2.60 ^{+0.1} _{-0.0}	0.102 ^{+0.004} _{-0.000}
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5 Firmware Modifications

5.1 General remarks to this chapter

The programmable logic code within the ETK-S21.1A is stored onto programmable logic devices (FPGA, CPLD). For the version syntax please refer to chapter 2.1.

Attention:

For updating the ETK - firmware with a later version by using HSP, all ETK firmware packages will be updated one after another. This will last a few minutes and must not be cancelled by the user. In case the firmware update had been finished unsuccessfully due to some reason, the update will have to be repeated. HSP will program the rescue packages onto the ETK. This procedure makes the firmware update fail-safe.

5.2 EPLD-Code

Revision	Description
Version 1.1	Initial Version
Version 3.3	Added ES891 Support

Delivery condition:

The EPLD version 3.3 will be programmed into all shipments

5.3 FPGA-Boot-Code for ETK-Mode

Revision	Description
Version 4.5	Initial Version
Version 7.1	Added ES891 Support
Version 7.2	Bug fixes for ES891 support

Delivery condition:

The FPGA-Boot version 7.2 will be programmed into all shipments

5.4 FPGA-Boot-Code for FETK-Mode

Revision	Description
Version 1.2.0	Initial Version
Version 1.3.0	Bug fixes for ES891 support
Version 1.4.0	New FETK boot HDC for production. No functional changes.

Delivery condition:

The FPGA-Boot version 1.4.0 will be programmed into all shipments

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5.5 FPGA-Code for ETK Mode

Revision	Description
Version 5.0	Initial Version
Version 5.1	Skipped
Version 5.2	Call 373920: Fixed problem with calibration wake-up when new ES device firmware does not perform a memory access before ECU handshake has completed (race condition between two state machines in JTAG controller)
Version 5.3	Call 395066: Trigger polling delayed by one polling cycle Call 394215: debugger arbitration fails with multiple breakpoints
Version 5.4	Call 412349: ETK-S21 Flash programming with PPC5777 Cut 2 fails
Version 5.5	Added support for DiffJTAG with ETAL6 Call 416222: Increased polling rate of JIN/JOUT register in order to improve handshake
Version 6.1	<ul style="list-style-type: none"> - Added support of LFAST interface with ETAL6 and added support of BIST feature for MPC5746R-ED - Call 433274: JTAG Clock switching problem at -30°C - Call 416222: Increased polling rate of JIN/JOUT register in order to improve handshake - Call 438230, Call 438232: Increased handshake register access frequency to meet timeout condition - Call 441601: First measurement values after coldstart always shows zero
Version 7.4	<ul style="list-style-type: none"> - Call 461033: LFAST communication instable - interruption after 30Minutes to 3hours - Call 441601: LFAST - Coldstart testcase: first measured values are always '0' - Added ES891 Support - Added ETAL6 Rev. C Support
Version 7.5	Bug fixes: Reconnection approved
Version 7.8	Keep ECU in reset until ETK is initialized
Version 7.9	Sporadically flashing programming fails if ETAL 6 Rev. C is connected

Delivery condition:

The FPGA version 7.9 will be programmed into all shipments

5.6 FPGA-Work-Code for FETK-Mode

Revision	Description
Version 1.6.0	Initial Version
Version 1.9.0	Bug fixes: Reconnection approved
Version 1.15.0	Filesystem update for FETK mode
Version 2.0.0	- Added support of LFAST in FETK mode

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	<ul style="list-style-type: none"> - Support for fast raster use cases - Increased performance for debugging over XCP
Version 2.2.0	<ul style="list-style-type: none"> - Measurement interruption in FETK mode: re-initialization fails, no access ECU anymore, persistent error message is shown in INCA (545949) - Improved stability of ETK-s21 Update in FETK mode (5553146, 551481)
Version 2.3.0	<p>Call 549866: Calwakeup - when ECU wakes up, measure values are not displayed right away, additional stop/start measurement in INCA necessary</p> <p>Added extended information for XCP DAQ overload events</p> <p>Added support of ECU defined error codes</p>
Version 2.4.0	<p>Call 558559: Measurement interruption use cases fail in FETK mode, no ECU access any more after reconnect</p>
Version 2.5.0	<p>Call 590832: Improve HW configuration process for Brain Dead Flash programming. Support of PROF auto configuration with ETK-S21.1A (im FETK mode)</p>

Delivery condition:

The FPGA-Work version 2.5.0 will be programmed into all shipments

6 Hardware Modifications

6.1 General remarks to this chapter

Hardware issues or obsolete parts can make it necessary to modify the population of the ETK. Information about the modifications is listed underneath. The hardware state starts with version **B010/00**. For the version syntax please refer to chapter 2.1.

6.2 No modification at hardware state B010/01

6.3 Hardware delivery condition

The hardware state **B010/01** will be delivered with all new shipments.

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7 Abbreviations

ETK	Product (emulator test probe)
ES1000	VME - system, successor of INCA-VME
INCA-VME	Old VME - system for MC and RP
ES891	MC hardware
ES690	MC hardware, successor of MAC2
ES59x	MC hardware, successor of ES690
MAC2	Old MC hardware
INCA	Measurement and Calibration Software of ETAS
ASCET-RP	Rapid Prototyping Software of ETAS
INTECRIO	Rapid Prototyping Software of ETAS
XETK Configuration Tool	Configuration Software, in order to configure a (X)ETK
HSP	H ardware S ervice P ack; ETAS product which includes the firmware for the complete ETAS hardware, shipped together with INCA but also available as standalone product, download at ETAS homepage possible
firmware	Software for MC hardware; necessary for implementation of new features or bug fixes
Hot-fix	Software bug-fix for a refresh version
tool-chain	MC hardware (e.g. ES690) and software (e.g. INCA)
MC	M easurement & C alibration
RP	R apid P rototyping
CPLD	C omplex P rogrammable L ogic D evice
FPGA	F ield P rogrammable G ate A rray; interface component to the application hardware
PCB	P rinted C ircuit B oard
DPR	Dual Ported RAM; special RAM onto the ETK which allows an access from ECU and application hardware at the same time
/CS	Chip select