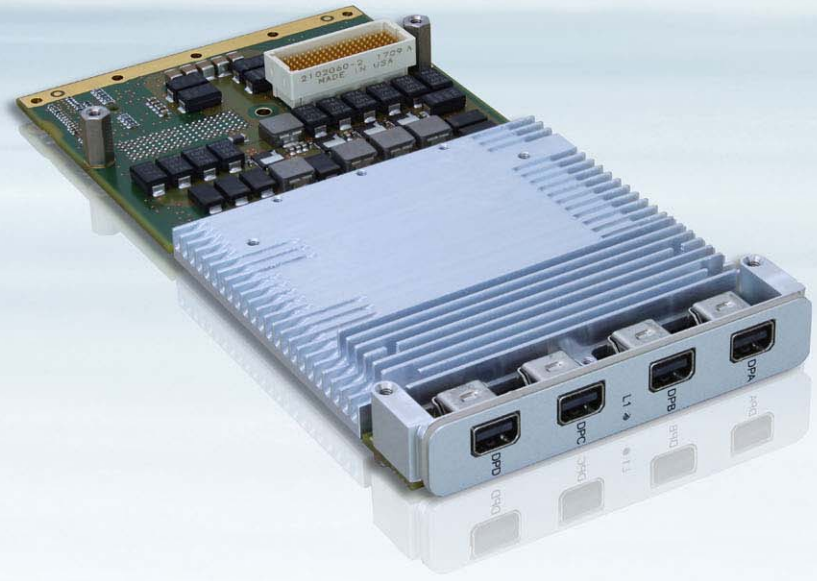
RELEASE NOTES



XMC-GPU91-EFT Release Notes

CA.DT.B41.0e - March 2018

POSSIBILITIES START HERE kontron

XMC-GPU91-EFT Release Notes

Disclaimer

Kontron would like to point out that the information contained in this user guide may be subject to alteration, particularly as a result of the constant upgrading of Kontron products. This document does not entail any guarantee on the part of Kontron with respect to technical processes described in the user guide or any product characteristics set out in the user guide. Kontron assumes no responsibility or liability for the use of the described product(s), conveys no license or title under any patent, copyright or mask work rights to these products and makes no representations or warranties that these products are free from patent, copyright or mask work right infringement unless otherwise specified. Applications that are described in this user guide are for illustration purposes only. Kontron makes no representation or warranty that such application will be suitable for the specified use without further testing or modification. Kontron expressly informs the user that this user guide only contains a general description of processes and instructions which may not be applicable in every individual case. In cases of doubt, please contact Kontron.

Kontron S&T AG

Lise-Meitner-Str. 3-5

86156 Augsburg

Germany

www.kontron.com

Revision History

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Revision	Brief Description of Changes	Date of Issue
0e	Initial Issue	03-2018

Customer Support

Please contact our support team at support.KFR@kontron.com

Customer Service

As a trusted technology innovator and global solutions provider, Kontron extends its embedded market strengths into a services portfolio allowing companies to break the barriers of traditional product lifecycles. Proven product expertise coupled with collaborative and highly-experienced support enables Kontron to provide exceptional peace of mind to build and maintain successful products.

For more details on Kontron's service offerings such as: enhanced repair services, extended warranty, Kontron training academy, and more visit http://www.kontron.com/support-and-services/services.

Customer Comments

If you have any difficulties using this manual, discover an error, or just want to provide some feedback, contact Kontron support. Detail any errors you find. We will correct the errors or problems as soon as possible and post the revised manual on our website.

Symbols

The following symbols may be used in this manual:

⚠DANGER	DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠WARNING	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	NOTICE indicates a property damage message.
	**Electric Shock!** This symbol and title warn of hazards due to electrical shocks (> 60 V) when touching products or parts of them. Failure to observe the precautions indicated and/or prescribed by the law may endanger your life/health and/or result in damage to your material.
	**ESD Sensitive Device!** This symbol and title inform that the electronic boards and their components are sensitive to static electricity. Care must therefore be taken during all handling operations and inspections of this product in order to ensure product integrity at all times.
	**HOT Surface!** Do NOT touch! Allow to cool before servicing.
	**Laser!** This symbol inform of the risk of exposure to laser beam from an electrical device. Eye protection per manufacturer notice shall review before servicing.
	This symbol indicates general information about the product and the user manual. This symbol also indicates detail information about the specific product configuration.
	This symbol indicates important information which must be read carefully.
	This symbol precedes helpful hints and tips for daily use.

For Your Safety

Your new Kontron product was developed and tested carefully to provide all features necessary to ensure its compliance with electrical safety requirements. It was also designed for a long fault-free life. However, the life expectancy of your product can be drastically reduced by improper treatment during unpacking and installation. Therefore, in the interest of your own safety and of the correct operation of your new Kontron product, you are requested to conform with the following guidelines.

High Voltage Safety Instructions

As a precaution and in case of danger, the power connector must be easily accessible. The power connector is the product's main disconnect device.

⚠CAUTION

Warning!
All operations on this device must be carried out by sufficiently skilled personnel only.

⚠CAUTION

Caution, Electric Shock!
Before installing a non hot-swappable Kontron product into a system always ensure that your mains power is switched off. This also applies to the installation of piggybacks. Serious electrical shock hazards can exist during all installation, repair, and maintenance operations on this product. Therefore, always unplug the power cable and any other cables which provide external voltages before performing any work on this product.
Earth ground connection to vehicle's chassis or a central grounding point shall remain connected. The earth ground cable shall be the last cable to be disconnected or the first cable to be connected when performing installation or removal procedures on this product.

Special Handling and Unpacking Instructions

ESD Sensitive Device!
Electronic boards and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times

Do not handle this product out of its protective enclosure while it is not used for operational purposes unless it is otherwise protected.

Whenever possible, unpack or pack this product only at EOS/ESD safe work stations. Where a safe work station is not guaranteed, it is important for the user to be electrically discharged before touching the product with his/her hands or tools. This is most easily done by touching a metal part of your system housing.

It is particularly important to observe standard anti-static precautions when changing piggybacks, ROM devices, jumper settings etc. If the product contains batteries for RTC or memory backup, ensure that the product is not placed on conductive surfaces, including anti-static plastics or sponges. They can cause short circuits and damage the batteries or conductive circuits on the product.

General Instructions on Usage

In order to maintain Kontron's product warranty and CE compliance, this product must not be altered or modified in any way. Changes or modifications to the product, that are not explicitly approved by Kontron and described in this manual or received from Kontron's Technical Support as a special handling instruction, will void your warranty and the CE compliance.

This product should only be installed in or connected to systems that fulfill all necessary technical and specific environmental requirements. This also applies to the operational temperature range of the specific board version, that must not be exceeded. If batteries are present, their temperature restrictions must be taken into account.

In performing all necessary installation and application operations, only follow the instructions supplied by the present manual.

Keep all the original packaging material for future storage or warranty shipments. If it is necessary to store or ship the product then re-pack it in the same manner as it was delivered.

Special care is necessary when handling or unpacking the product. See Special Handling and Unpacking Instruction.

Environmental Protection Statement

This product has been manufactured to satisfy environmental protection requirements where possible. Many of the components used (structural parts, printed circuit boards, connectors, batteries, etc.) are capable of being recycled.

Final disposition of this product after its service life must be accomplished in accordance with applicable country, state, or local laws or regulations.

Environmental protection is a high priority with Kontron.
Kontron follows the DEEE/WEEE directive.
You are encouraged to return our products for proper disposal.

The Waste Electrical and Electronic Equipment (WEEE) Directive aims to:

- Reduce waste arising from electrical and electronic equipment (EEE)
- Make producers of EEE responsible for the environmental impact of their products, especially when they become waste
- Encourage separate collection and subsequent treatment, reuse, recovery, recycling and sound environmental disposal of EEE

Improve the environmental performance of all those involved during the lifecycle of EEE

Terms and Conditions

Kontron warrants products in accordance with defined regional warranty periods. For more information about warranty compliance and conformity, and the warranty period in your region, visit http://www.kontron.com/terms-and-conditions.

Kontron sells products worldwide and declares regional General Terms & Conditions of Sale, and Purchase Order Terms & Conditions. Visit http://www.kontron.com/terms-and-conditions

For contact information, refer to the corporate offices contact information on the last page of this user guide or visit our website CONTACT US.

Table Of Contents

1 / Introduction

1.1 EFT and Product Name

XMC-GPU91 is a XMC graphic mezzanine board featuring the AMD E9171-MCM GPU coupled with 4 GB of video memory.

XMC-GPU91-SA200 and XMC-GPU91-SA100 are the is the Early Field Test (EFT) sample first release of this new Kontron graphic product based on a AMD E9171-MCM GPU. The EFT comes with 4 mDP++ ports on the front panel.

1.2 EFT Release Notes Overview

This document defines the XMC-GPU91-SAxxx EFT boards and their limitations.

Functional changes that differ from previous version of the document are identified by a vertical bar in the margin.

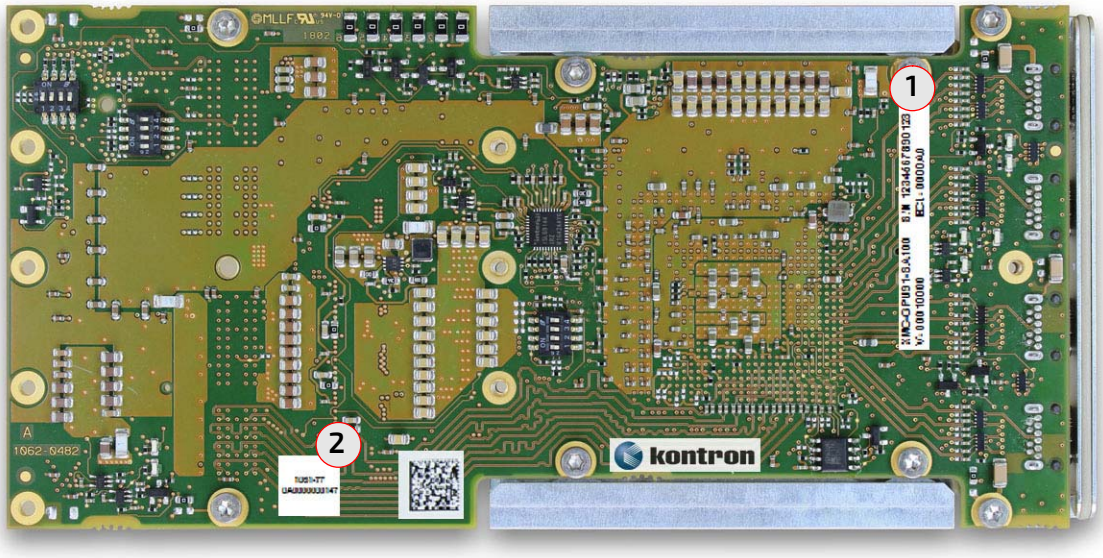
This document refers to the up-to-date release of the following documentation:

- XMC-GPU91 User's Guide CA.DT.B40

2 / EFT Board Identification

Labels fitted to the bottom side of the XMC-GPU91

- "Order Code", "Board revision" and "Chronological serial number" label **(1)**
- SAP Label **(2)**



3 / General Information

3.1 Handling

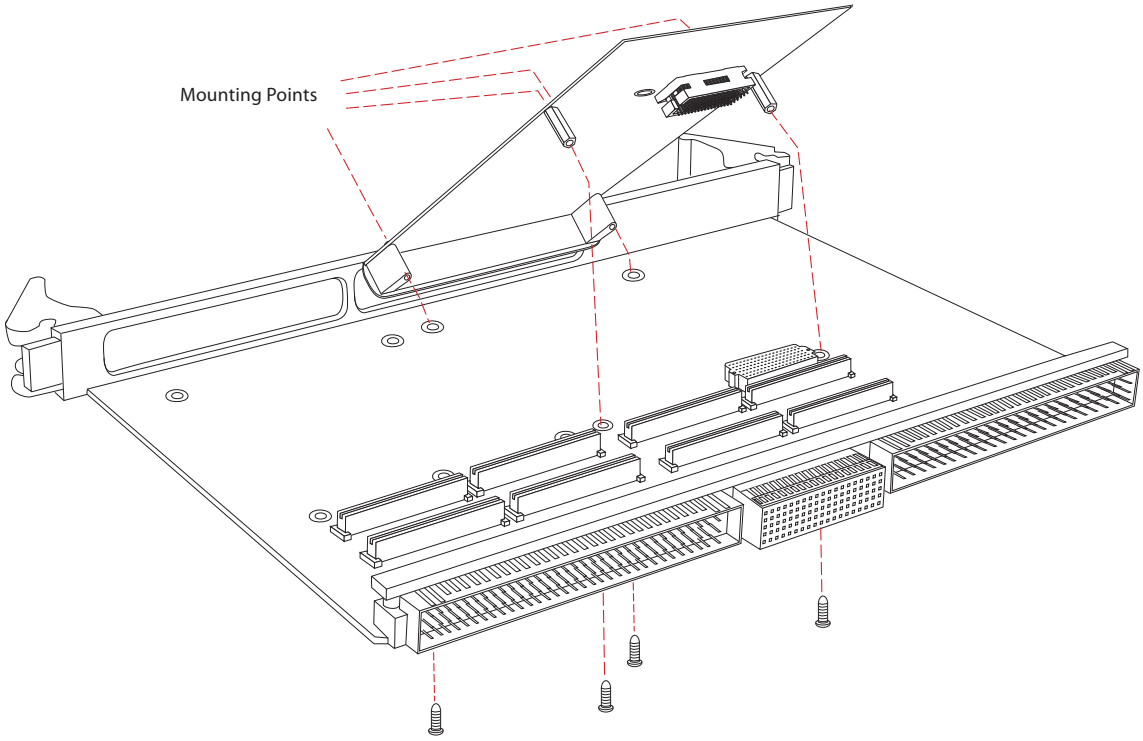
Personal Injuries

- GPU heatsinks may get very hot; do not touch them while removing the board from chassis.
- Be careful of cutting edges when handling the board.
- Do not place the board on any surface or in its storage container before the board and its heatsinks have cooled down to room temperature.

EMC Gasket

In order to protect the EMC gasket located on the front panel, it is recommended to insert the mezzanine board in the host board with precautions, starting by inserting the front panel according the following picture:

Figure 1: Installation of a XMC-GPU91/SA on a VME Board



Tighten with a torque of 0.383 Nm (0.233 lbf ft)

Refer also to the User's Guide CA.DT.B40 for installation and handling precautions.

3.2 Power Supplies

XMC VPWR and 3.3V power supplies monotonic rise time have to be included between 1 ms and 25 ms at Power on.

For a power off condition to be valid, the VPWR and 3.3V power supply inputs should remain at 0 V for at least one second.

Supported XMC VPWR input voltage: 5V +/-5% and 12V +/-10%.

Refer to the user's guide for other input power specifications.

3.3 HDMI and DVI adapters

Front panel mini DisplayPort inputs are dual mode ports that allow the use of HDMI and DVI adapters.

Here a non-exhaustive list of tested adapters:

- MiniDP to HDMI adapter: Icy Box, part number IB-AC506
- MiniDP to DVI adapter: StarTech, part number MDP2DVIMM3B

4 / XMC-GPU91 EFT Characteristics and Limitations

4.1 EFT Configuration Overview

EFT CONFIGURATION – ECL 1000A0	
Order Codes	XMC-GPU91-SA100 (VITA 42 XMC connectors) XMC-GPU91-SA200 (VITA 61 XMC connectors)
Operating conditions	Inlet air temperature shall be between 10°C to 30°C max. Minimum inlet airflow depends on XMC integration, and can't be defined at a XMC mezzanine level. Maximum E9171-MCM GPU junction temperature shall never exceed 95°C. Use E9171-MCM temperature monitoring software to ensure that E9171-MCM part is cooled enough when operating.
E.C. Level	EC 1000A0
Drivers	E9171-MCM drivers for LinuxOS and Windows. Refer to AMD site to download native drivers.

4.2 XMC-GPU91 EFT Functions Overview

HWTS: Kontron Proprietary Hardware Test Suite

Functions Overview

GROUP	ID	PROTOCOL / FUNCTION	TEST	SEVERITY	FULL TEMP. RANGE TEST	STATUS	COMMENT
GPU	GPU	E9171-MCM	HWTS	Basic test	Yes	Available	Operating frequency restriction to secure thermal operating point SCLK: 734 Mhz MCLK: 625 Mhz
XMC	P15 XMC interface	PCIe	HWTS	Basic test	Yes	Available	Up to PCIe x8 gen3
XMC	P16 XMC interface	XMCIO	Not tested	Basic test	No	Not available	
Front panel	DPA, DPB, DPC, DPD	Display port	HWTS	Basic test	Yes	Available	
Front panel indicator	Front LED	Main Reset	HWTS	Basic test	Yes	Available	
Board configuration	NVMRO	NVMRO	Not tested	Not tested	No	Not available	

4.3 Qualification Tests

The XMC-GPU91 is currently under qualification. Contact Kontron for further information.

4.4 Restrictions

- GPU SCLK forced to 734Mhz to limit overall XMC power dissipation below 25 W
- GPU MCLK forced to 625Mhz to limit overall XMC power dissipation below 25 W
- The power profile is frozen by the VBIOS, the “AMD Power Play” using is not permitted.
- It is not allowed to change microswitches positions. All microswithces position shall be in the OFF position.
- Kontron does not allow E9171-MCM VBIOS flash update.

4.5 In case of Trouble

Contact your Kontron support.

5 / Board Revision Guide for XMC-GPU91-EFT

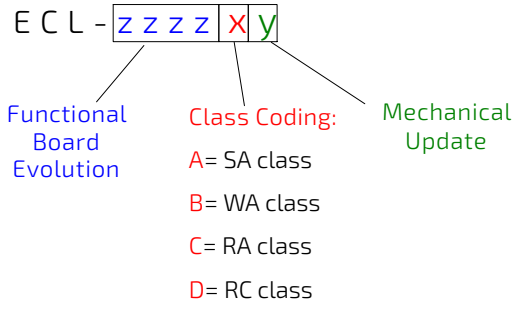
5.1 How to Use the Board Revision Guide Table

1. Find the E.C. Level associated to your board as described in the Chapter 2 "Board Identification" page 2.
2. Find the column associated to the E.C. Level of your board in this table.
3. Check for a specific item in the table lines:
   - 3.1. A **X** (cross) in the E.C. Level column indicates that this item applies to this E.C. Level.
   - 3.2. No **X** (cross) in the E.C. Level column indicates that this item does not apply to this E.C. Level.
   - 3.3. If the functionality described by the item is not available on your board do not take into account this item. To know the functionalities available or not on your board, read the User's Guide associated with your board version.

Each item is fully described in section 5.4 "Item Detailed Description" page 8.

5.2 E.C. Level Coding

The E.C. Level of XMC-GPU91 mezzanine board is composed of a functional part coding and a mechanical part coding. The five first digits are used to code the functional board evolution and the two last digits are used to code the mechanical board evolution, as described as follows:



5.3 Revision Guide Table for XMC-GPU91-SA Functional E.C. Levels

Item	CRP	Description	E.C. Levels		
			1000xx		
1	36642	Power supply telemetry not supported	X		
2	36643	GPU Frequency operating point change is not allowed	X		

5.4 Items Detailed Description for XMC-GPU91-SA Functional E.C. Levels

Each item applies only to a specific group of E.C. levels.
Refer to the table available in section 5.3 “Revision Guide” page 8 to find the specific E.C. levels associated to a specific item.

Item #1 Power supply telemetry not supported

Description: Power supply telemetry is not supported.

Impact: Power supply monitoring software will report erroneous values.

Solution: Will be fixed in future E.C. level revision.

Item #2 GPU Frequency operating point change is not allowed

Description: GPU SCLK=734 MHz and MCLK=625 MHz frequencies are forced and cannot be changed by user. This operating point has been selected to limit GPU power disspation below 25W worst case.

Impact: GPU performance level is according to the selected operating point (SLK 734 MHz, MCLK 625 MHz).

Solution: Will be fixed in future E.C. level revision.

About Kontron - An S&T Company

Kontron is a global leader in IoT/Embedded Computing Technology (ECT). As a part of technology group S&T, Kontron offers a combined portfolio of secure hardware, middleware and services for Internet of Things (IoT) and Industry 4.0 applications. With its standard products and tailor-made solutions based on highly reliable state-of-the-art embedded technologies, Kontron provides secure and innovative applications for a variety of industries. As a result, customers benefit from accelerated time-to-market, reduced total cost of ownership, product longevity and the best fully integrated applications overall.

For more information, please visit: **www.kontron.com**

CORPORATE OFFICES

FRANCE

150, rue Marcelin Berthelot
ZI de Toulon-Est - BP 244
83078 Toulon Cedex 9 - France
Tel: +33 4 98 16 34 00
Fax: +33 4 98 16 34 01
sales.KFR@kontron.com

GLOBAL HEADQUARTERS

Lise-Meitner-Str. 3-5
86156 Augsburg
Germany
Tel.: + 49 821 4086-0
Fax: + 49 821 4086-111
info@kontron.com

NORTH AMERICA

9477 Waples Street, Suite 150
San Diego, CA 92121
USA
Tel.: + 1 888 294 4558
Fax: + 1 858 677 0898
info@us.kontron.com

ASIA PACIFIC

1~2F, 10 Bldg, Nº 8 Liangshuihe 2nd Str.
Economical & Techno. Develop. Zone,
Beijing, 100176, P.R. China
Tel.: + 86 10 63751188
Fax: + 86 10 83682438
info@kontron.cn