HARDWARE
RELEASE NOTES

VX305x

CA.DT.B26-2e - November 2016

POSSIBILITIES START HERE kontron

VX305x Hardware Release Notes

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REVISION HISTORY

PUBLICATION TITLE:	VX305x Hardware Release Notes	
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Revision	Brief Description of Changes	Date of Issue
2e	Updated Sections: - 4.3 - Battery Replacement - MODP-GM2-SM750-00 Revision Guide Table	11-2016
1e	Chapter 3 Updated - Order Codes: 16 GB order codes added New section: 4.6 Non-Operating Temperature Restriction Sections 5.2 & 5.3 updated - New item added in board revision guide	09-2016
0e	Initial Issue	06-2016

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 (> 60V) 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. Please refer also to the "High-Voltage Safety Instructions" portion below in this section.
	**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.
	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 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, in case of danger, the power connector is the product's main disconnect device and must be easily accessible.

⚠CAUTION

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

Caution, Electric Shock!
Before installing a not hot-swappable Kontron product into a system always ensure that your mains power is switched off. This applies also to the installation of piggybacks. Serious electrical shock hazards can exist during all installation, repair and maintenance operations with this product. Therefore, always unplug the power cable and any other cables which provide external voltages before performing work.
Earth ground connection to vehicle's chassis or a central grounding point shall remain connected. The earth ground cable shall be the last disconnected or the first connected during operations of cabling.

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 board 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 board.

GENERAL INSTRUCTIONS ON USAGE

In order to maintain Kontron's product warranty, this product must not be altered or modified in any way. Changes or modifications to the device, which 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.

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

In performing all necessary installation and application operations, please follow only 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 board, please re-pack it as nearly as possible in the manner in which it was delivered.

Special care is necessary when handling or unpacking the product. Please consult the special handling and unpacking instruction.

Kontron products may be equipped with parts from Japanese manufacturers. Customers must ensure that final Kontron products destination is not impacted by this condition.

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

TRADEMARKS

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Table Of Contents

1 / Introduction

This document describes the engineering evolution of the referenced products to the up-to-date ones which are detailed in the Kontron hardware documentation.

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

You will find in the following information:

- How to identify the Engineering Change (E.C.) level and the Order Code of the board you have in hand: Chapter 2 page 2
- What is the important information related to the different revisions of the board and the VX305x User's Guide:
  - General information for VX305x boards Chapter 4 page 4
  - Information related to a specific E.C. level Chapter 5 page 6

In this document the term VX305x will be associated to the 3U VPX board family, including VX3052 dual core and VX3058 eight core module.

This document applies to all VX305x Environment Classes (if available): Standard and Rugged Conduction-Cooled versions.

If a specific information applies only to a specific environment class, it is clearly specified in the information description. For example, the reference VX305x/RC applies only to VX305x Rugged Conduction-Cooled environment class.

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

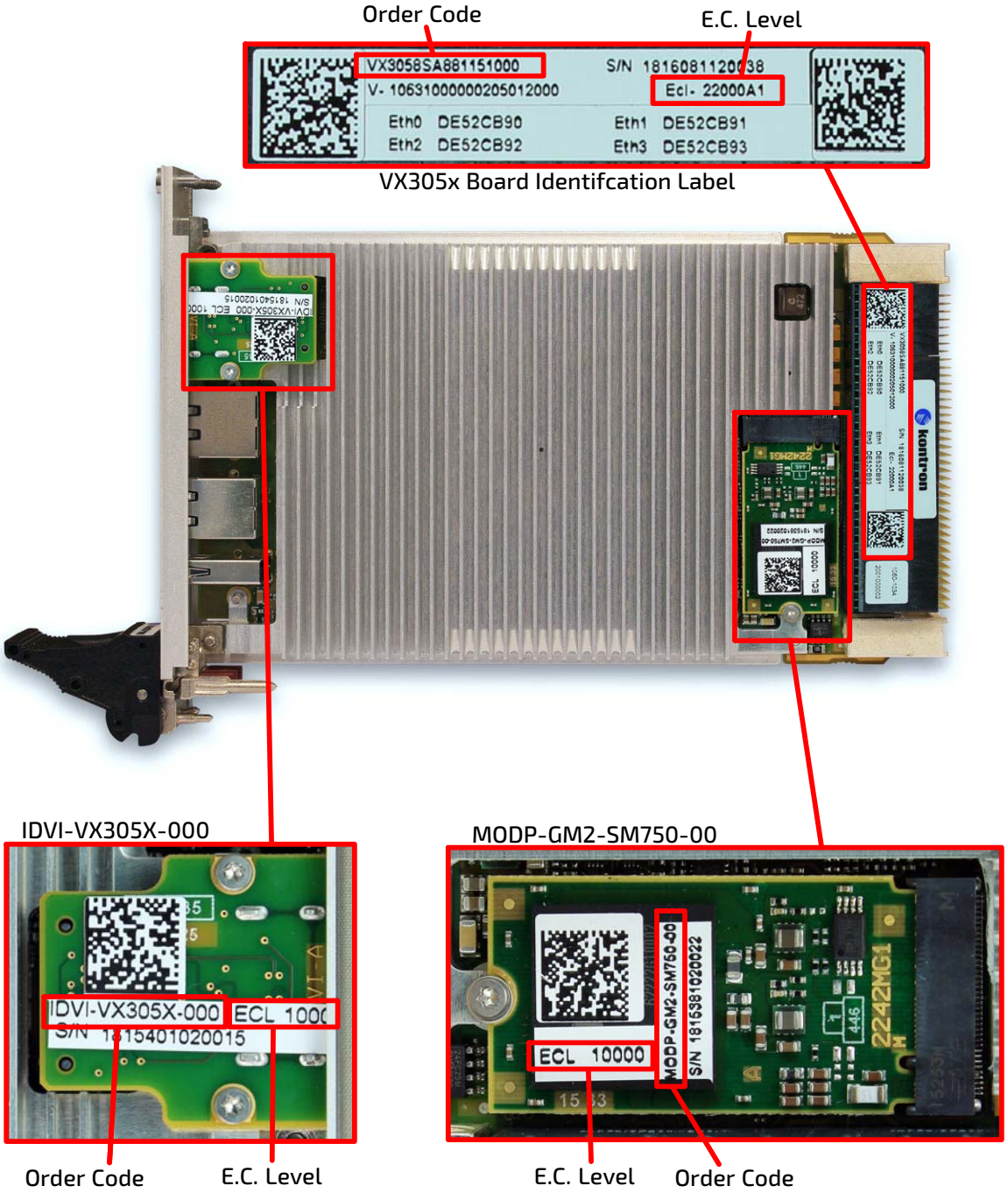
- VX305x User's Guide CA.DT.B25

Please contact Kontron for further information regarding EFT (Early Field Test samples) E.C. Levels not shown in the following tables.

2 / Board Identification

Engineering Change Level and Order Code

The Engineering Change Level (E.C. Level) and Order Code information are available on the "Board Identification" labels, located on the top side of the board.



3 / Released Order Codes versus Applicable Errata

ORDER CODE	DESCRIPTION	APPLICABLE ERRATA
VX3058SA881150000 VX3058SA8F1150000	3U single slot 5 HP (1.0") VPX CPU Blade with 8-core Intel® Xeon® D-1537 processor, 1.7 GHz, 35 W, 8/16 GB dualbank DDR4, Base Front-I/O, fully switched x8 PCIe 3, Air cooled 0 °C to +55 °C, no XMC slot option	VX305xSA errata described in section 5.2 page 6 and 5.3 page 6 Mechanical errata described in section 5.4.1 page 7 and 5.5.1 page 8
VX3058SA881151000 VX3058SA8F1151000	3U single slot 5 HP (1.0") VPX CPU Blade with 8-core Intel® Xeon® D-1537 processor, 1.7 GHz, 35 W, 8/16 GB dualbank DDR4, additional graphics HDMI front /rear, fully switched x8 PCIe 3, Air cooled 0 °C to +55 °C, no XMC slot option	VX305xSA errata described in section 5.2 page 6 and 5.3 page 6 Mechanical errata described in section 5.4.2 page 8 and 5.5.2 page 8 MODP-GM2-SM750-00 errata in chapter 6 page 10 IDVI-VX305X-000 errata in chapter 7 page 12
VX3052SA280150000 VX3052SA2F0150000	3U single slot 5 HP (1.0") VPX CPU Blade with 2-core Intel® Xeon® D-1508 processor, 2.2 GHz, 25 W, 8/16 GB dualbank DDR4, Base Front-I/O, fully switched x8 PCIe 3, Air cooled 0 °C to +55 °C, no XMC slot option	VX305xSA errata described in section in section 5.2 page 6 and 5.3 page 6 Mechanical errata described in section 5.4.1 page 7 and 5.5.1 page 8
VX3052SA280151000 VX3052SA2F0151000	3U single slot 5 HP (1.0") VPX CPU Blade with 2-core Intel® Xeon® D-1508 processor, 2.2 GHz, 25 W, 8/16 GB dualbank DDR4, additional graphics HDMI front /rear, fully switched x8 PCIe 3,Air cooled 0 °C to +55 °C, no XMC slot option	VX305xSA errata described in chapter 5 page 6 Mechanical errata described in section 5.4.2 page 8 and 5.5.2 page 8 MODP-GM2-SM750-00 errata in chapter 6 page 10 IDVI-VX305X-000 errata in chapter 7 page 12
VX3058SA882150000 VX3058SA8F2150000	3U single slot 5 HP (1.0") VPX CPU Blade with 8-core Intel® Xeon® D-1548 processor, 2.0 GHz, 45 W, 8/16 GB dualbank DDR4, Base Front-I/O, fully switched x8 PCIe 3, Air cooled 0 °C to +55 °C, no XMC slot option	VX305xSA errata described in section in section 5.2 page 6 and 5.3 page 6 Mechanical errata described in section 5.4.1 page 7 and 5.5.1 page 8
VX3058SA882151000 VX3058SA8F2151000	3U single slot 5 HP (1.0") VPX CPU Blade with 8-core Intel® Xeon® D-1548 processor, 2.0 GHz, 45 W, 8/16 GB dualbank DDR4, additional graphics HDMI front /rear, fully switched x8 PCIe 3,Air cooled 0 °C to +55 °C, no XMC slot option	VX305xSA errata described in chapter 5 page 6 Mechanical errata described in section 5.4.2 page 8 and 5.5.2 page 8 MODP-GM2-SM750-00 errata in chapter 6 page 10 IDVI-VX305X-000 errata in chapter 7 page 12

4 / General Information

4.1 Handling

Personal Injuries

- Do not touch the CPUs heatsink while removing the board from a rack because it can get very hot.
- Be careful while handling the board, because of the cutting edges of the heatsink.
- Do not place the board on any surface or in any form of storage container until the board and its heatsink have cooled down to room temperature.

EMC Gasket

In order to protect the EMC gasket located in the front panel, be careful during the insertion of the boards in the rack. It is recommended to insert the boards in a rack starting from the higher slot number and extract them starting from the lowest slot number.

4.2 Power Supplies

The system power supply ramp-up phase must be between 20 and 150 msec.

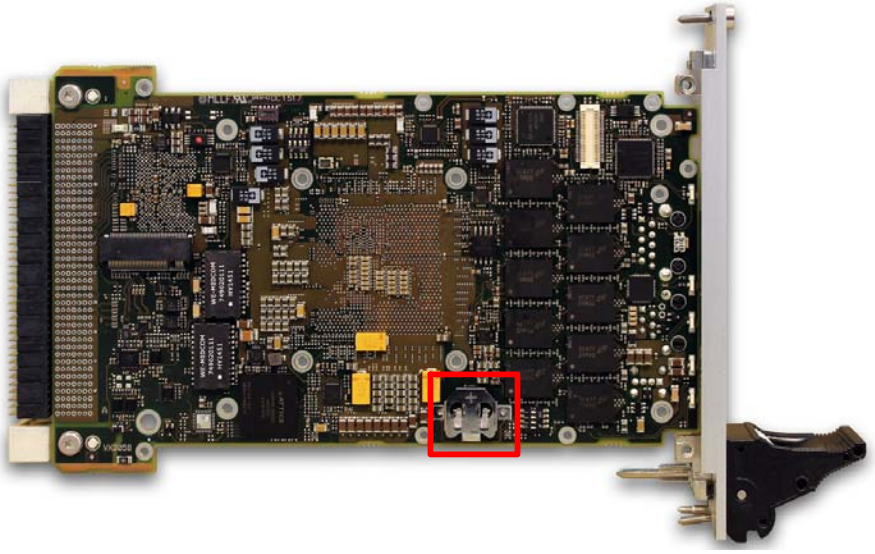
For a power-off condition to be valid, the VPX VS1 (12V) power supply input should remain at 0 V for at least one second.

4.3 Battery Replacement

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer. The battery is used to run a time of day clock during the absence of power. Operation without the battery is possible but the date and time will not be retained in the absence of power. Alternatively, the VPX VBAT signal on P0 can provide a 3.3 V voltage from the backplane to retain the date and time.

To replace the battery, proceed as follows:

- Turn off the power.
- Get the battery outside of its holder:



- Place the new battery in the socket with the plus pole facing upwards.

⚠CAUTION	Danger of explosion when replacing with wrong type of battery. Replace only with the same or equivalent type recommended by the manufacturer. The lithium battery type must be UL recognized.
	Do not dispose of lithium batteries in general trash collection. Dispose of the battery according to the local regulations dealing with the disposal of these special materials, (e.g. to the collecting points for dispose of batteries).
	Reference of the battery used on the VX305x: RENATA CR1220 The design of an electronic circuit powered by a component class battery requires the designer to consider two interacting paths that determine a battery's life: consumption of active electrochemical components and thermal wear-out.

4.4 Interoperability Issue with Rear Transition Modules

- VX305x-SA limitations with PB-VX3-40x Rear Transition Module (4 HP and 5 HP version):
  - Ethernet SFP+ cage ETHA is not functional with VX305x-SA boards.
  - Mini Display port DPA is not functional with VX305x-SA boards.

- VX305x-SA limitations with PB-VX3-41x Rear Transition Module (8 HP and 10 HP version):
  - Ethernet SFP+ cage ETHA is not functional with VX305x-SA boards.
  - Mini Display DPA port is not functional with VX305x-SA boards.
  - USB 2.0 E port is not functional with VX305x-SA boards.
  - Mini Display DPB port is not functional with VX305x-SA boards.

4.5 Non-operating Temperature Restriction regarding VITA 47 Standard

The specifications from the datasheet of some components like the Intel® processor do not fully meet the VITA 47 non-operating temperature, C2 class (-40°C/+85°C).

However, Kontron product verification tests include C2 class non-operating temperature tests, in accordance with MIL-STD-810, Method 501, Procedure I, and MIL-STD-810, Method 502, Procedure I.

All non-operating temperature tests passed successfully, without any component degradation or functional issue.

5 / VX305x SA Board Revision Guide

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 don't 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 5.3 "Item Detailed Description" page 6.

5.2 VX305x SA Board Revision Guide Table - Functional E.C. Levels

Item	KDP	Description	E.C. Levels			
			2x000	2x001		
1	22169	User GPIO5 is not functional	X			
2	22170	Processor PROCHOT forced mode is not functional	X			
3	17829	Board may not start at power-up with cPLD version below V4	X			
4	23672 23673	+12 V only VPX power supply configuration is not supported	X	X		

5.3 VX305x SA Board Item Detailed Description for Functional E.C. Levels

Each item applies only to a specific group of E.C. Levels.
Refer to the table available in section 5.2 page 6 to find the specific E.C. Levels associated to a specific item.

Item #1 User GPIO5 is not functional

Description: User GPIO5 is not functional.

Impact: User GPIO5 cannot be used

Solution: Fixed in E.C. Level 2x001

Item #2 Processor PROCHOT forced mode is not functional

Description: Processor PROCHOT should be forced when iicroswitch SW2 position 4 is ON (see user's Guide, microswitch description). This feature is not available and SW2 position 4 must be set to OFF.

Impact: PROCHOT mode can't be forced.

Solution: Fixed in E.C. Level 2x001.

Item #3 Board may not start at power-up with cPLD version below V4

Description: At power-up, board may not start with cPLD version below V4. Occurrence is one in every 20 power-up. This is due to a bad power-on sequence. cPLD V4 fix this issue.

Impact: Board does not start with cPLD version below V4, a new power-off / power-on sequence is needed to start the board.

Solution: Fixed in E.C. Level 2x001, or with cPLD V4 minimal version.

Item #4 +12 V only VPX power supply configuration is not supported.

Description: At power-up, board may not start without VPX +3.3V_AUX power supply presence on the board. VPX +3.3V_AUX power supply presence is required on VPX slots to power-on the board.

Impact: The board does not start in a 12 V only VPX power supply configuration, without VPX +3.3V_AUX power supply. VPX +3.3V_AUX power supply is required by VPX standards.

Solution: Will be fixed in a future E.C. Level.

5.4 VX305x SA Board Revision Guide Table - Mechanical E.C. Levels

5.4.1 Mechanical E.C. Levels SA Class, No IDVI/IETH/XMC options

Item	KDP	Description	E.C. Levels			
		No Errata identified today.				

5.4.2 Mechanical E.C. Levels for SA Class IDVI / No XMC options

Item	KDP	Description	E.C. Levels			
			xxxxxA0	xxxxxA1	xxxxxA2	
MG1	22196	Front panel Electro Static Discharge immunity level, near HDMI output, is below +-4kV	X	X		

5.4.3 Mechanical E.C. Levels for SA Class IETH / No XMC options

Not released.

5.4.4 Mechanical E.C. Levels for SA Class XMC option

Not released.

5.4.5 Mechanical E.C. Levels for RC Class

Not released.

5.5 VX305x SA Board Item Detailed Description for Mechanical E.C. Levels

Each item applies only to a specific group of E.C. Levels. Refer to the table available in section 5.4 page 7 to find the specific E.C. Levels associated to a specific item.

5.5.1 Mechanical E.C. Levels SA Class No IDVI/IETH/XMC

No Errata identified today.

5.5.2 Mechanical E.C. Levels for SA Class IDVI / No XMC options

Item #MG1 Front panel Electro Static Discharge immunity level, near HDMI output, is below +-4kV

Description: Front panel Electro Static Discharge immunity level, near HDMI output, is below +-4kV

Impact: Board may reboot when +-4kV of Electro Static Discharges are applied on the front panel, near the HDMI connector.

Solution: Fixed in Mechanical E.C. Level A2 (IDVI-VX305X-000 front panel option).

5.5.3 Mechanical E.C. Levels for SA Class IETH / No XMC options

Not released.

5.5.4 Mechanical E.C. Levels for SA Class XMC option

Not released.

5.5.5 Mechanical E.C. Levels for RC Class

Not released.

6 / MODP-GM2-SM750-00 Revision Guide

6.1 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 don't 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 6.3 "Item Detailed Description" page 11.

6.2 MODP-GM2-SM750-00 Revision Guide Table - Functional E.C. Levels

Item	KDP	Description	E.C. Levels			
			10000			
1	22841	Bad Video display for resolutions above 1024x768	X			
2	-	Monitor EDID info can't be read	X			

6.3 MODP-GM2-SM750-00 Item Detailed Description for Functional E.C. Levels

Each item applies only to a specific group of E.C. Levels. Refer to the table available in section 6.2 page 10 to find the specific E.C. Levels associated to a specific item.

Item #1 Bad Video display for resolutions above 1024x768

Description: Video display not clean for resolution above 1024x768.

Impact: Video display not clean.

Solution: Force display resolution in 800x600 or 1024x768 mode.

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

Item #2 Monitor EDID info can't be read

Description: Monitor EDID info can't be read due to bad configuration pins.

Impact: Monitor EDID info can't be read.

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

7 / IDVI-VX305X-000 Revision Guide

7.1 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 don't 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 7.3 "Item Detailed Description" page 12.

7.2 IDVI-VX305X-000 Revision Guide Table - Functional E.C. Levels

Item	KDP	Description	E.C. Levels			
			1000	2000		
1	21922	IDVI-VX305x-000 Electro Static Discharge immunity level is below +-4kV	X			

7.3 IDVI-VX305X-000 Item Detailed Description for Functional E.C. Levels

Each item applies only to a specific group of E.C. Levels. Refer to the table available in section 7.2 page 12 to find the specific E.C. Levels associated to a specific item.

Item #1 IDVI-VX305x-000 Electro Static Discharge immunity level is below +-4kV

Description: If +-4kV Electro Static Discharges are applied on the VX305xSA front panel, near the front panel HDMI connector, the board may reboot. This is due to a IDVI-VX305x-000 ESD immunity level below +-4kV.

Impact: Board may reboot when +-4kV of Electro Static Discharges are applied on the front panel, near the HDMI connector.

Solution: Fixed in E.C. Level 2000

About Kontron

Kontron, a global leader in embedded computing technology and trusted advisor in IoT, works closely with its customers, allowing them to focus on their core competencies by offering a complete and integrated portfolio of hardware, software and services designed to help them make the most of their applications.

With a significant percentage of employees in research and development, Kontron creates many of the standards that drive the world's embedded computing platforms; bringing to life numerous technologies and applications that touch millions of lives. The result is an accelerated time-to-market, reduced total-cost-of-ownership, product longevity and the best possible overall application with leading-edge, highest reliability embedded technology

Kontron is a listed company. Its shares are traded in the Prime Standard segment of the Frankfurt Stock Exchange and on other exchanges under the symbol "KBC".
For more information, please visit: **www.kontron.com**

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