



Universe IID/IIB™ Device Differences

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1. Design Differences in the Universe IID and Universe IIB

The Universe IID is functionally the same as the Universe IIB and is produced in the same process technology. All timing and electrical characteristics remain the same as found as Universe IIB. Table 1 shows the errata in the Universe IIB that have been corrected in the Universe IID.

Table 1: Summary of Universe IIB Device Errata Addressed with Universe IID

Errata Description	Addressed in Universe IIB	Address in Universe IID
Improper PCI cycle termination in 64 bit PCI applications	No	Yes
ESD Sensitivity	No	Yes

Note: IDT recommends the Universe IID device for all new designs.

1.1 Universe IID Errata Corrections

The Universe IID addresses errata in the Universe IIB. The following sections describe the errata that the Universe IID corrects.

1.1.1 Improper PCI Cycle Termination

In 64-bit PCI bus applications, the Universe may exhibit incorrectly terminated cycles on the PCI bus when the Universe is acting as a PCI Initiator (master). The incorrect PCI bus termination is logged as a Master Abort in the PCI_CSR of the Universe. This errata is isolated to 64-bit PCI bus applications.

The issue is aggravated by elevated ambient temperature (above 40C), reduced 5V supply voltage (approximately 4.75 V), PCI clock speed of 33 MHz, increased PCI bus loading and specific data patterns. The worst case pattern has been identified as alternating Fs and 0s.

This errata can be captured on an analyzer as follows:

- Trigger the scope from the output trigger of the analyzer
- Set the trigger for the analyzer to be the following:
 - LEVEL 1: Find Frame Low 1 Time Else on Not Frame go to Level 1
 - LEVEL 2: Find rising edge of TRDY
 - LEVEL 3: Find (Frame =1, IRDY=0 DEVSEL=1 TRDY=1 STOP=1) 9 times else go to level 1.

Note: You may need to change the number of times to find the pattern in Level 3.

1.1.2 ESD Sensitivity

The Universe IIB (CA91C142B) does not meet 2000V ESD tolerance as per MIL STD 883 Method 3015 Human Body Model test. The most sensitive ESD tolerance is 500V HBM seen on the AVDD and AVSS pins.

Universe IID (CA91C142D) ESD sensitivity meets or exceeds 2000 V HBM

The following precautions are recommended when handling the Universe IIB devices to reduce ESD exposure:

- Wear wrist straps while seated.
- Wear footwear or heel straps while standing.
- Wear ESD smocks.
- Regularly check wrist straps and footwear.
- Ensure ESD dissipative flooring and work surfaces.
- Ensure work surfaces and equipment connected to electrical ground.
- Use ESD compliant chairs and carts, or “drag-chain” to the floor.
- Ensure humidity in all inspection and assembly areas maintained between 30% and 70%.
- Minimize inspection and handling.
- If inspection is required, keep parts within trays (if possible).
- No conductive or electrostatic generating materials in close proximity to unprotected product, e.g. shop travelers, labels, cardboard, Plexiglas, wood, CRT screens, etc.
- Ionization systems should be in place to help dissipate residual charge built up on any material that is static generating and in close proximity to Universe IIB devices.
- A field strength meter can be used to check items that come into contact with the Universe IIB; this tool may be very useful in confirming safe surfaces and those that contain residual charges that may need neutralizing ionizers.



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