

***Intel[®] Graphics Driver v38.15.0 for
Windows* 7 (32-bit) for Intel[®]
Pentium[®]/Celeron[®] Processor N3000
Family and Intel[®] Atom[™] x5-E8000
Processor***

Release Notes

March 2016



By using this document, in addition to any agreements you have with Intel, you accept the terms set forth below.

You may not use or facilitate the use of this document in connection with any infringement or other legal analysis concerning Intel products described herein. You agree to grant Intel a non-exclusive, royalty-free license to any patent claim thereafter drafted which includes subject matter disclosed herein.

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT.

Intel may make changes to specifications and product descriptions at any time, without notice. Designers must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined." Do not finalize a design with this information.

The products described in this document may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

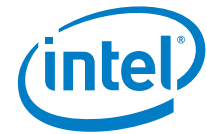
Contact your local Intel sales office or your distributor to obtain the latest specifications and before placing your product order.

Copies of documents which have an order number and are referenced in this document, or other Intel literature, may be obtained by calling 1-800-548-4725, or go to: <http://www.intel.com/design/literature.htm>.

Intel, the Intel logo, Celeron, Intel Atom, and Pentium are trademarks of Intel Corporation in the U.S. and/or other countries.

*Other names and brands may be claimed as the property of others.

© 2016, Intel Corporation.



Contents

Intended Audience	6
Customer Support	7
1.0 Introduction	8
1.1 Terminology	8
1.2 Reference Documents	9
2.0 Release Content	10
3.0 Hardware and Software Compatibility	11
3.1 Supported SoC	11
3.2 Support Operating Systems.....	11
3.2.1 BIOS/Firmware Version.....	11
4.0 Features and Limitations	12
4.1 New in This Release.....	12
4.2 Existing Features from Previous Release.....	12
4.3 Limitations.....	13
5.0 Known/Fixed Issues	14
5.1 Known Issues	14
5.2 Fixed Issues	15
6.0 Where to Find the Release	16
7.0 Software Licenses	17

Tables

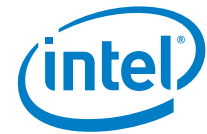
Table 1.	Terminology	8
Table 2.	Reference Documents	9
Table 3.	Known Issues	14
Table 4.	Fixed Issues	15
Table 5.	Release Package Versions	16



Revision History

Date	Revision	Description
March 2016	002	<ul style="list-style-type: none">• Intel® Graphics Driver v38.15.0.1125 Maintenance Release 1 (MR1) for Windows* 7 32-bit Release.• Support Intel® Pentium®/Celeron® Processor N3XXX Family C0/D1 Steps and Intel® Atom™ x5-E8000 Processor D1 step.• Update Message of the Week (MOW) CDI document number.• Updated resolution of Known Issue #5221324, the ARB_compressed_texture_pixel_storage test and OpenGL 4.2 (compressed-pxstore) test pass in latest build #1125, remove from the OGL failure list.
September 2015	001	Intel® Graphics Driver v38.15.0.1081 for Windows* 7 32-bit Release.

§

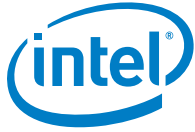


Contents

Intended Audience	6
Customer Support	7
1.0 Introduction	8
1.1 Terminology	8
1.2 Reference Documents	9
2.0 Release Content	10
3.0 Hardware and Software Compatibility	11
3.1 Supported SoC	11
3.2 Support Operating Systems	11
3.2.1 BIOS/Firmware Version	11
4.0 Features and Limitations	12
4.1 New in This Release	12
4.2 Existing Features from Previous Release	12
4.3 Limitations	13
5.0 Known/Fixed Issues	14
5.1 Known Issues	14
5.2 Fixed Issues	15
6.0 Where to Find the Release	16
7.0 Software Licenses	17

Tables

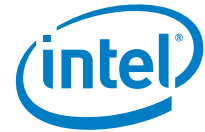
Table 1.	Terminology	8
Table 2.	Reference Documents	9
Table 3.	Known Issues	14
Table 4.	Fixed Issues	15
Table 5.	Release Package Versions	16



Intended Audience

This document is intended for all platform and system developers who need to interface with the graphics subsystem. This includes but is not limited to: platform designers, system BIOS developers, system integrators, original equipment manufacturers, system control application developers, and end users.

§



Customer Support

The Intel® Premier Support (IPS) provides an interactive website where Intel® Software Development Product customers can submit questions and requests for technical support.

To submit a question or sighting, go to Intel® Premier Support:

<https://premier.intel.com/>

For more information on registering with Intel® Premier Support, go to:

<http://software.intel.com/en-us/articles/performance-tools-for-software-developers-intel-premier-support>

Note: If your distributor provides technical support for this product, please contact them for support rather than Intel.

§



1.0 Introduction

Intel® Graphics Driver is designed specifically to support the unique GRAPHICS DRIVER requirements of embedded applications for Intel® processor-based platforms with integrated graphics capability. This document provides release specifics and technical information on:

- Release package contents
- System requirement, hardware and software compatibility
- Features information and limitation
- Known issues
- Reference documents

For detailed installation instructions, please refer to the User Guide which is included in the release package.

1.1 Terminology

Table 1. Terminology

Term	Description
DP*	Display Port
BKC	Best Known Configuration
BIOS	Basic Input/Output System
BMP	BIOS Modification Program; allows customizing the data in VBT
CRB	Customer Reference Board
eDP*	Embedded Display Port
GOP	Graphics Output Protocol
HDMI	High-Definition Multimedia Interface, an uncompressed, all-digital, audio/video interface
IOTG	Intel® Internet of Things Group
OS	Operating System
SoC	System On Chip



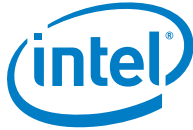
Term	Description
vBIOS	Video Basic Input Output System. A component of system BIOS that drivers graphics input and output
VBT	The Video BIOS Table (VBT) is a block of customizable platform-specific data used by the Video BIOS and device drivers such as Flat Panel Timings, OEM definable Mode Timings, GPIO pins, Clock and more.
VIP	Intel® Validation Internet Portal

1.2 Reference Documents

Table 2. Reference Documents

Document	Document No./Location
<i>Intel® Graphics Driver v38.15.0 for Intel® Pentium*/Celeron* Processor N3000 Family Windows User's Guide</i>	332136
<i>Intel® HD Graphics – Binary Modification Program (BMP) - User Guide for GOP/VBIOS VBT - Rev. 1.0</i>	556723
<i>Best Known Configuration (BKC) of Windows* 7/Windows Embedded Standard* 7 for IOTG Braswell Customer Reference Board (Cherry Hill**)</i>	556987
<i>Braswell Platform for Internet of Things (IoT) Product Overview</i>	541278
<i>Braswell (IOTG) Platform - Message of the Week (MOW)</i>	558590
<i>Intel® Graphics Driver v38.15.0 (32-bit) for Windows* 7 Operating Systems Technical Product Specification (TPS) Supporting Intel® Pentium*/Celeron® Processor N3000 Family</i>	558204

§



2.0 Release Content

This release contains the following:

- Intel_Graphics_Driver_Win7_<REL>_38_15_0_<XXXX> contains Intel® Graphics Driver, Intel® Display Audio Driver for Windows* 7/Windows Embedded Standard* 7 32-bit, and Intel® Media SDK
- User Guide
- Release Notes (this file)
- License
- VBIOS and BMP (BIOS Modification Program) is required for Windows* 7/Windows Embedded Standard* 7 to Customize the BIOS for individual flat panel display. The VBIOS and BMP can be obtained from VIP (<https://platformsw.intel.com/>). If you do not have access, contact your Intel Representative

Note:

<REL> = Release Type: Alpha, Beta, or Gold

<XXXX> = build version number

§



3.0 Hardware and Software Compatibility

This section provides a complete summary of the hardware and software compatibility.

3.1 Supported SoC

The SoC supports the Intel® Pentium®/Celeron® Processor N3000 Family and Intel® Atom™ x5-E8000 Processor.

Please check with your system provider to determine the Intel® processor used in your system.

3.2 Support Operating Systems

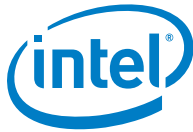
This version of driver supports the following OS or distributions:

- Microsoft* Windows* 7 Professional (32-bit)
- Microsoft* Windows* 7 Ultimate (32-bit)
- Microsoft* Windows Embedded Standard* 7 (32-bit)
- Microsoft* Windows Embedded POSReady* 7 (32-bit)

3.2.1 BIOS/Firmware Version

The driver is supported with the BIOS/Firmware version specified in the BKC for Windows* 7/Windows Embedded Standard* 7. Refer to the BKC for details.

§



4.0 Features and Limitations

4.1 New in This Release

- Support Intel® Pentium®/Celeron® Processor N3XXX Family and Intel® Atom™ x5-E8000 Processor D1 Stepping.

4.2 Existing Features from Previous Release

The following are existing features from previous releases:

- Driver includes Microsoft* WHQL certification.
- Supports up to three simultaneous displays (refer to Limitations for details)
- Driver supports a Display Interface of HDMI 1.4b, eDP* 1.4, DP* 1.1a.
- Driver supports a wide range of display resolutions. 640x480@60Hz is the minimum resolution supported and 2560X1600X24bpp@60Hz is the maximum resolution supported on eDP*, 3840x2160X24bpp@30Hz/2560x1600x24bpp@ 60 Hz is the maximum resolution supported on DP*, and HDMI Display.
- Single, clone, and extended display modes are supported.
- 2D, D3D, OpenGL* 1.x/2.x/3.x/4.2 and OpenCL* 1.2 are supported.
- HDCP version 1.4 is supported.
- Full video decoding capability for HEVC, H.264, MPEG2, MVC, WMV/VC-1, JPEG, MJPEG, and VP8.
- Full video encoding capability for H.264, MVC, JPEG, and MJPEG.
- Media SDK which offers a custom framework for video encoding.
- HD Audio.
- MVC Encode and Decode supported via Media SDK.
- LVDS bridge support for eDP*/DP* to LVDS based on Chrontel* 7511 and Parade* PS8625.
- Support OpenGL and OpenCL extensions.

Refer to *Intel® Graphics Driver v38.15.0 (32-bit) for Windows* 7 Operating Systems Technical Product Specification (TPS) Supporting Intel® Pentium®/Celeron® Processor N3000 Family* for features details.



4.3 Limitations

The following are limitations or unsupported features in this version of the driver:

- Intel® Automatic Display Brightness is not supported in this release.
- eDP* interface only validated up to v1.3.
- Three simultaneous displays are validated only with the configuration of the DDI0-HDMI port, DDI1-DP port, and DDI2- DP port. Results may differ based on configuration, resolution, and workload.

§



5.0 Known/Fixed Issues

5.1 Known Issues

[Table 3](#) lists the known issues in this release:

Table 3. Known Issues

Reference Number.	Description	Resolution/ Workaround	Status
5221316	In Common User Interface(CUI) profile page new profile settings created do not follow user selections	This is determined to be design behavior. Whenever a new profile is created, all the pages (Display, Video, #D, Options and others) are defaults made available to users.	No Fix (Expected behavior)
5221324	GLSL v1.x, 4.X failures.	The specific OGL failures include Multithreading (multithread), Framebuffer object (fbo), Draw buffers 2 (draw-buffers2), GLSL built-in functions, textureGrad (glsl-bif-texture-grad), Texture integer sampling (int-textures-sampling), GLSL sampler 2D rectangle (glsl-sampler2DRect), Various OpenGL 3.x tests (gl33), Sampling shadows maps with textureGrad* (shadow-grad). Tessellation shader usage test (tess-usage), Double precision types test (glsl-fp64-types), Sample shading test (sample_shading), Various OpenGL 4.0 tests (gl40), ARB_get_program_binary test, OpenGL 4.1 (get-program-binary). ARB_shading_language_420pack test, OpenGL 4.2 (glsl-420pack). ARB_base_instance test, OpenGL 4.2 (baseinstance), Various OpenGL 4.2 tests (gl42).	No Fix planned at this time
5221380	No display when passive converter/cable is used.	The DP Port of the Cherry Hill CRB doesn't support passive converter; please use active converter. This is a CRB limitation that cannot be fixed in the graphics driver.	No Fix (HW limitation)
5221404	vbebat02.exe shows corruption on certain resolution in certain monitor.	This is root caused to test tool issue that cannot be fixed in the graphics driver.	No Fix



Reference Number.	Description	Resolution/ Workaround	Status
5221470	Invalid digital signatures during Windows* 7 32bit graphic driver installation.	This is observed during Windows* 7 32bit graphics driver installation. For solution, run rootsupd.exe from Microsoft* to update root certificates on system before perform driver installation. Tools can be found here: http://download.windowsupdate.com/msdownload/update/v3/static/trustedr/en/rootsupd.exe	No Fix
5221491	High CPU usage and video playback lagging on 4K display.	Observed high CPU usage on playing 4K video using media player classic. Video playback start to lag and not in sync with audio when CPU utilization increased. This issue only happens when configure the media player classic with Intel® QSV or DXVA2 (Copyback) as the hardware decoder. For workaround, please configure with DXVA2 (Native).	No Fix (Quick Sync and DXVA2 (Copyback) are not supported)
1504169384	For system setup of DP port with certain UHD monitor, the CUI Display Resolution Setting list doesn't have 4 K resolution option.	Issue under investigation, there is no planned workaround at this time.	TBD
1504169311	Black Screen when running 3DMark11 on Cherry Hill CRB DDI2 port (Display Port).	Issue under investigation, there is no planned workaround at this time	TBD
1504169256	No display on Cherry Hill CRB DP port (J5A1) after perform more than 6 cycle of screen rotation.	Issue under investigation, there is no planned workaround at this time	TBD
1504169108	4 K video playback lagging when Windows AERO theme is enabled.	Disable AERO in 4K video playback situations.	TBD

5.2 Fixed Issues

[Table 4](#) lists the issues fixed in this release:

Table 4. Fixed Issues

Reference Number	Description	Resolution/Workaround	Status



6.0 Where to Find the Release

The Intel® Graphics Driver package can be downloaded from one of the following locations:

- The Intel® Validation Internet Portal (VIP). You can search for the packages by kit number or version number. The Intel® Graphics Driver packages kit number is specified in the platform specific BKC of Windows* Operating System, and also published in the Message of the Week (MOW). BKC and MOW can be obtained from IBL/CDI. For access to VIP, go to <https://platformsw.intel.com/home.aspx>. If you do not have access, contact your Intel® Representative.
- The Intel® Embedded Design Center at http://www.intel.com/p/en_US/embedded/hwsw/software.

[Table 5](#) lists the release package version numbers.

Table 5. Release Package Versions

Release Type	Title	Release Version
MR1	Intel® Graphics Driver MR1 38.15.0.1125	38.15.0.1125

§



7.0 Software Licenses

This is a Gold release with production licenses.

The Intel® Graphics Driver, Intel® Display Audio Driver, and Intel® Media SDK are subject to the terms of the license agreement located in the license file in this distribution package. Read, understand, and agree to the terms before using the Drivers in this release package.

§