Intel® Embedded Graphics Drivers 10.4
for Embedded Intel® Architecture

Product Overview
Intel® Embedded Graphics Drivers (IEGD) specifically target the needs of embedded platform developers, offering a robust alternative to drivers designed for the desktop and mobile market segments. With a flexible architecture, extending to the video BIOS, and UEFI video driver, this driver set speeds customer time-to-market by allowing OEMs and system integrators to customize configurations in-house, while maintaining a competitive performance profile. Intel Embedded Graphics Drivers are validated only on the specific integrated processors, chipsets, system controllers, operating systems, APIs, and sDVO port devices listed in this document.

Note: To download the correct IEGD Gold Driver (10.4 or 10.3.1), please visit: edc.intel.com/Software/Downloads/IEGD.

IA Silicon
Intel® Embedded Graphics Drivers 10.4 were validated on platforms using these graphics chipsets, system controllers, and processors:
- Intel® Atom™ processor D400/500, N400/500 series
- Intel® System Controller Hub (SCH) US15W/US15wP/US15wPT + Intel® Atom™ processor Z5xx
- Mobile Intel® 945GSE Express chipset with Intel® Atom™ processor 270

OSs and APIs
- Windows XP* (SP3), Windows XP Embedded* (SP3)
- Microsoft Windows Embedded for Point-of-Service* (SP3)
- Microsoft Windows Embedded Standard 2009*
- Microsoft Windows Embedded CE 6.0 R2*
- Moblin* 2.1 IVI
- Linux Fedora* 10
- DOS support (IBM PC DOS 2000,* Microsoft DOS 6.22*)

OpenGL* for Linux
- OpenGL on supported 2.6 kernel Linux distributions for advanced 3D graphics acceleration on dual independent displays
- OpenGL ES 1.1 and 2.0 supported on the Intel® System Controller Hub US15W/US15wP/US15wPT
- OpenGL 2.0 supported on Intel System Controller Hub US15wP/US15wPT (with Linux,* Microsoft Windows XP, Microsoft Windows XP Embedded,* and Microsoft Windows CE*) and on the Intel Q45, Q41, Q45, and Q35 Express chipsets (with Linux)

Port Drivers
- Internal LVDS on capable Intel® architecture chipsets
- Internal HDMI (with High Definition Content Protection support; Windows® only) on capable Intel architecture chipsets

Dual digital transmitter support (e.g., Display Magic MAG-7308-01 dual LVDS ADD2 card*)
- Chrontel and Silicon Image* sDVO DVI, HDMI, LVDS transmitters and VGA/CRT, TV out encoders

Intel® Dynamic Display Configuration Technology
IEGD and this technology lets embedded customers expand usage models beyond typical desktop and laptop configurations through numerous advanced display configuration capabilities, including:
- Multi-GPU multi-monitor mode, whereby a PCI or PCI Express*-based graphic card’s display outputs operate concurrently with integrated graphics
  - Now supported with the Intel® SCH US15wP/US15wPT with Intel® Atom™ processor Z5xx (new for IEGD 10.4)
  - Allows for up to six independent displays to be rendered simultaneously
- Dynamic display detection and enablement according to configurable display port order
- Simplified specification of customized flat-panel timings
- Allows display resolution to be set with both DisplayID and EDID with LVDS displays
- Setup of conditional behavior when EDID and/or non-EDID panels are detected
- Advanced configuration for clone display mode on different-sized displays
- Use of integrated display ports in conjunction with PCI- and PCI Express*-based graphics card outputs
- Ability to display POST messages and boot to DOS in clone display mode (VESA modes only)
Cross-Platform Feature Consistency

Modular architecture enables similar functionality across supported Intel® platforms and operating systems. This flexibility reduces time-to-market through customer familiarity and ease of portability to future embedded Intel platforms with integrated graphics. Intel Embedded Graphics Drivers support a wide range of applications including, but not limited to:

- Embodied in-vehicle infotainment systems running Moblin Linux, driving dual independent LVDS flat-panel displays and utilizing MPEG2 hardware video decode acceleration
- Point-of-sale systems running desktop Windows XP*, driving dual independent LVDS flat-panel displays
- Kiosk systems running Windows XP Embedded*, driving dual independent displays (i.e., analog CRT with digital DVI flat-panel displays)
- Video slot machines running Windows Embedded CE 6.0 R2*, driving two LVDS flat-panels in vertical extended mode
- Digital advertisement systems running Fedora Linux, driving single or dual 16:9 wide-screen HDMI plasma displays
- Single board computers running Windows Embedded Standard 2009*, driving HDMI, VGA, or LVDS panels

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| Common feature set | • Cross-platform feature consistency  
• Common features portable across Intel’s integrated graphics chipset product families and across operating systems |
| Configuration Editor (CED) | • Graphical pre-installation utility program allows easy creation of consolidated driver installation packages for Windows Embedded CE*, Windows* Linux* and VBIOS across numerous platforms and display combinations |
| Port driver device extensibility | • Software development kit allows the addition of customized devices (beyond those supported by default) |
| Configurable display support | • Simplified mechanism for adding new or custom display modes  
• Advanced configuration capabilities instruct the driver how to detect and select appropriate timings for system displays |
| Control APIs | • Non-standard features, such as display switching and toggling, exposed and DVO/sDVO device control |
| Boot configurability | • Driver and video BIOS may be customized specifically for OEM display and platform configurations |
| Overlay support | • Improved video playback performance using the X11 Xv interface or Microsoft DirectDraw* interface; up to two displays |
| Multiple-display support | • Dual independent head(DIH) or extended mode display available when supported by the hardware  
• Twin mode (same content and same display timings via single pipe to two displays) and clone mode (same content but different timings via two pipes to two displays) supported across many embedded chipsets |
| Multi-GPU multi-monitor mode | • Allows integrated chipset graphics processing unit (GPU) to concurrently function with a discrete GPU/graphics card. This allows for generation of unique display timings on greater than two panels or monitors simultaneously. |
| ACPI on Microsoft Windows* and Linux* | • Advanced configuration and power interface for all supported embedded Intel® architecture-based chipsets and system controller hubs |
| 3D acceleration | • Improved performance of applications, which take advantage of OS acceleration APIs, including X11 XAA interface or Microsoft DirectDraw interface |
| Microsoft Direct3D* support | • Improved performance for 3D applications utilizing Microsoft DirectX® 9.0c APIs for Windows operating systems |
| Microsoft Direct3D Mobile* support | • Improved performance for 3D applications utilizing Microsoft DirectX APIs for Windows Embedded CE operating systems |
| Upscaling | • Lower-resolution modes can be displayed as full screen with configurations that support upscaling (example: internal LVDS, and Chrontel CH7308*) |
| Certified Output Protection Protocol support on Windows XP* | • Enables applications to copy-protect video stream outputs using HDCP, CQMS-A and ACP |

Intel® System Controller Hub US15W, US15WP and US15WPT only

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| Hardware Video Decode Acceleration support | • Relieves decode burden from processor, reduces power consumption, eliminates need for software CODECs  
• MPEG2, H.264, and VC-1 formats supported in Windows Embedded Standard 2009*, Windows XP*, Windows XP Embedded*, and Windows Embedded for Point of Service* (WEPoS) via DXVA  
• MPEG2, MPEG4, and H.264 formats supported in Microsoft Windows CE* |
| Anti-aliasing | • Minimizes distortion when displaying high-resolution video at a lower resolution. Supported on Linux, Microsoft Windows XP, and Microsoft Windows CE |

For further product information: edc.intel.com/Software/Downloads/IEGD

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