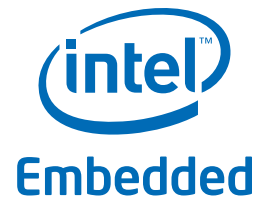


# Product Brief

Intel® System Controller Hub US15W

Embedded Computing



# Intel® System Controller Hub US15W for Embedded Computing

## Product Overview

The Intel® System Controller Hub (SCH) US15W, available in two package sizes as well as both commercial and industrial temperature options, is a low-power, highly integrated chipset that addresses key requirements of thermally constrained and fanless embedded applications. It combines the Intel® Graphics Media Accelerator 500 (Intel® GMA 500), memory controller, and I/O controller in a single-chip solution while featuring advanced 3D graphics and extensive I/O capabilities such as USB 2.0, SDIO and PCI Express.\* It supports Intel® High Definition Audio<sup>1</sup> and hardware video decode acceleration, a 400/533 MHz CMOS front-side bus (FSB), dual independent display, and 2 GB max memory in a single channel with one or two ranks.

The Intel SCH US15W has a thermal design power<sup>2</sup> (TDP) of 2.3 watts and is validated with the Intel® Atom™ processor Z5xx series. This platform has a combined TDP under 5 watts and features embedded lifecycle support, making it ideal for many embedded market segments such as in-vehicle infotainment, industrial control and automation, gaming, medical, media phones, and retail and transaction solutions (i.e., kiosks, point-of-service terminals). The platform is also supported by the Intel® Embedded Graphics Drivers and video BIOS, developed specifically for embedded products and applications ([developer.intel.com/design/intarch/Swsup/graphics\\_drivers.htm](http://developer.intel.com/design/intarch/Swsup/graphics_drivers.htm)).

## Graphics and Display

Intel GMA 500 is a flexible, programmable architecture that supports shader-based technology, 2D, 3D and advanced 3D graphics, high-definition video decode, and image processing. Features include screen tiling, internal true color processing, zero overhead anti-aliasing, programmable shader 3D accelerator, and 32-bit floating-point operations.

Dual display pipes with rotation support, along with low-voltage differential signaling (LVDS) and serial DVO (SDVO) display ports, permit simultaneous independent operation of one display or two. SDVO adapters provide interfaces to a variety of external display technologies while the LVDS interface allows the Intel



GMA 500 to communicate directly to a flat-panel display. The LVDS interface supports 18-bit or 24-bit color and EDID and EDID-less displays with a maximum pixel clock of 112 MHz. SDVO may be used for any external display device such as HDMI/DVI, analog TV, VGA/CRT and LVDS, and includes EDID and EDID-less support with a 160 MHz pixel clock.

## Video

Hardware video decode acceleration relieves the decode burden from the processor and reduces power consumption of the system. Full hardware acceleration of H.264, MPEG2, MPEG4, VC1, and WMV9 is supported, eliminating the need for software decode and off-loading the processor.

## Audio

Intel High Definition Audio supports up to four audio streams (up to 16 channels each), 32-bit sample depth, and sample rates to 192 KHz.

## Interfaces

The Intel SCH US15W supports eight USB 2.0 ports, and three Secure Digital I/O 1.1 and Multimedia Card Controller 4.0 ports. The SMBus Host Controller is compatible with most I<sup>2</sup>C devices, while the LPC 1.1 bus enables firmware hub, embedded controller and other legacy devices. A single-channel PATA interface supports two devices (master/slave), and two x1 ports support PCI Express Base Specification Revision 1.0a.

Advanced Configuration and Power Interface (ACPI) management exposes platform power management features and details to the operating system, allowing application control of system sleep states, device power states, CPU power states, CPU performance states, and CPU throttling states.

### Packaging and Operating Temperature

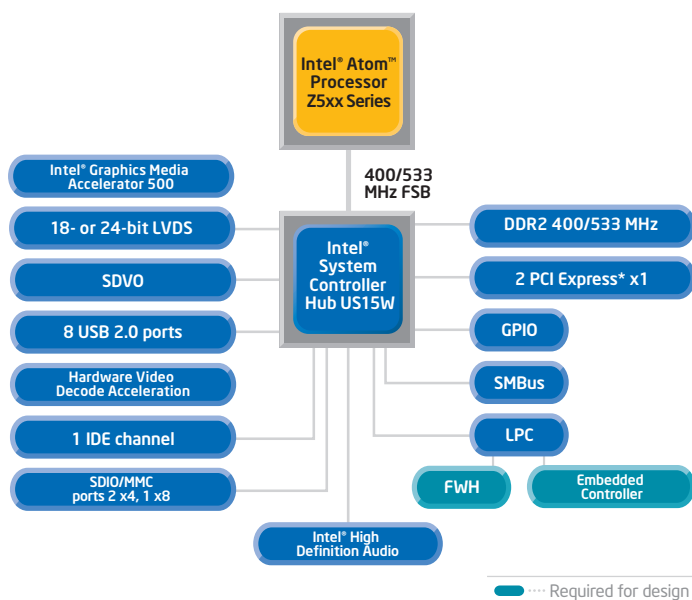
For design flexibility, the Intel SCH US15W is offered in two package sizes. A small footprint version in a 0.6mm ball pitch is suitable for handheld and small form-factor designs. A larger version, in 1.0mm ball pitch, is available for designs without small space restrictions. The larger version also has an industrial temperature SKU option.

### Ecosystem Support

Along with a strong ecosystem of hardware and software vendors, including members of the Intel® Embedded and Communications Alliance, Intel helps cost-effectively meet development challenges and speed time-to-market ([intel.com/go/eca](http://intel.com/go/eca)).

### Embedded Lifecycle

Protects system investment by enabling extended product availability for embedded customers.



### Intel® System Controller Hub US15W for Embedded Computing

Product Name	Product Code	Thermal Design Power <sup>2</sup>	Temperature Range	Package
Intel® System Controller Hub US15W	AF82US15W	2.3 watts	Commercial: 0° to +70°C	1249-ball FCBGA lead free, 22x22 mm
Intel® System Controller Hub US15WP	LE82US15EC	2.3 watts	Commercial: 0° to +70°C	1295-ball FCBGA lead free, 37.5x37.5 mm
Intel® System Controller Hub US15WPT	LE82US15EE	2.3 watts	Industrial: -40° to +85°C	1295-ball FCBGA lead free, 37.5x37.5 mm

### Intel in Embedded and Communications: [intel.com/embedded](http://intel.com/embedded)

<sup>1</sup> Intel® High Definition Audio requires a system with an appropriate Intel chipset and a motherboard with an appropriate codec and the necessary drivers installed. System sound quality will vary depending on actual implementation, controller, codec, drivers and speakers. For more information about Intel® HD audio, refer to [www.intel.com](http://www.intel.com).

<sup>2</sup> TDP specification should be used to design chipset thermal solution. It is not the maximum theoretical power the chipset can generate.

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