



Application Brief

Increased Usability, Ease of Development and Reliability: Key Features for Operator Panel Designs

AMD Solutions for HMI (Human-Machine Interface) and Operator Panel Applications

Because AMD offers scalable embedded solutions, systems based on AMD processors can help deliver excellent graphics performance and a consistent user experience in both low power solutions - targeted at small or mobile operator panels - and high performance solutions - needed for large or integrated operator panels. For low power and cost sensitive designs, the processors in the AMD Embedded G-Series SOC family are built around an optimized power efficient core that delivers good CPU and graphics performance in a compact ball grid array (BGA) package. For high performance applications that require the integration of functions or high performance, the AMD Embedded R-Series APUs (Accelerated Processing Units) deliver exceptional CPU and graphics performance in a solution that is still power efficient.

Improvements in the usability of industrial machines over the last decade have helped improve the efficiency of factories by helping to enable users to act on more information, quicker and more accurately, and facilitate maintenance and troubleshooting. To make the user interfaces on these machines more intuitive, operator panel OEMs are beginning to implement consumer-like interfaces with gesture-based inputs like those users have already become familiar with on smart devices and in-home gaming consoles. Additionally, the potential for analytics, 3D graphics and video to further increase operator efficiency is only now beginning to be explored.

While traditional benefits of these solutions include longevity and low power consumption, applications built around the AMD G-Series SOCs and R-Series APUs also offer graphics capabilities not typically found in solutions targeting Industrial Control and Automation applications.

AMD Embedded Solutions feature a variety of attributes for Operator Panel applications

- PC-compatible solutions backed by an ecosystem of software and tools to help deliver a full solution, easily integrate with enterprise networks, and help shorten design cycles

- Microsoft Windows® compatibility for full-featured GUI
- Broad ecosystem support to help simplify development
- Ease of networking with IP-based industrial and enterprise networks
- SOC solutions that scale price, power and performance to help meet the needs of a range of mobile, scalable and high-performance operator panels
 - Same design can scale from low-power mobile or small form factor to high-performance panel solutions
 - Ability to support same features and functions with a single software solution, regardless of screen size
 - Support for hardware virtualization, remote management and excellent graphics across product line
- Integrated AMD Radeon™ graphics deliver excellent performance per watt and a compatible user experience across a full operator panel portfolio
 - Excellent graphics performance per watt with integrated AMD Radeon™ graphics
 - Low power and high integration well-suited for mobile or small form factor operator panels
 - Compact and low power SOC solution is easy to design into small form factor fan-less designs
- Reliable designs enabled through support for hardware virtualization and remote management across families
 - Increased system reliability and reduced downtime
 - Virtualization support in hardware enables the combination of an RTOS for process or machine control and Windows® for a full-featured GUI
 - Out of band Remote management solution support, to remotely manage devices even when the OS is not running

AMD Embedded Solutions for HMI and Operator Panel Applications

FOR HIGH PERFORMANCE PANELS

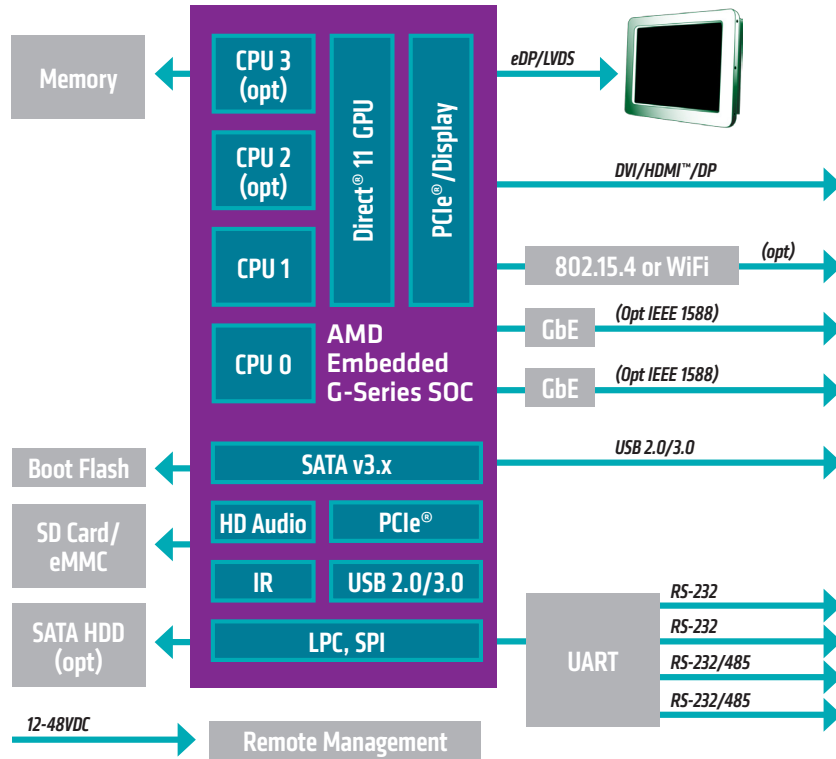
- Recommended: AMD GX-420CA SOC
 - Excellent graphics performance
 - Quad-core x86 performance
 - Higher performance alternative: AMD R-464LAPU

FOR SCALABLE OPERATOR PANELS

- Recommended: AMD G-Series SOC Family
 - Excellent performance with balanced power
 - Dual and Quad-core Scalability
 - 3.3W – 10.8W Average Power²

FOR SMALL OR MOBILE PANELS

- Recommended: AMD GX-210HA SOC
 - Low-power at only 4.1W average power¹
 - Highly Integrated Dual-core SOC
 - Excellent graphics performance/Watt
 - Lower power/cost alternative: AMD G-T16R APU



www.amd.com/embeddedsales | www.amd.com/industrial

¹The average power for the AMD GX-210HA SOC is 4.1 Watts, determined by averaging the results of the measured average power of the SOC running the following benchmarks: 3DMark[®] 11, AMD Sys Stress Test CPU, AMD Sys Stress Test CPU 6 GPU, AMD Sys Stress Test GPU, Winbench[®] 99, CoreMark, Game:Meat Boy, PCMark[®] 7, POV-Ray, Sandra 2011, Game: Street Fighter. Testing was performed on an AMD E1-2100 (Rev A1) that is equivalent to the AMD GX-210HA SOC. System configuration: AMD E1-2100 @ 70°C, "Laine" development platform, 4GB RAM, Windows 7 Ultimate. Please see AMD Publication ID 53395A for more information. EMB-41-2
²The average power for the AMD GX-210JA SOC is 3.3 Watts, determined by averaging the results of the measured average power of the SOC running the following benchmarks: 3DMark[®] 11, AMD Sys Stress Test CPU, AMD Sys Stress Test CPU 6 GPU, AMD Sys Stress Test GPU, Winbench[®] 99, CoreMark(Multi-thread), Game:Meat Boy, PCMark[®] 7, POV-Ray(all), Sandra 2011, Game: Street Fighter. System configuration: AMD GX-210JA @ 60°C, "Laine" development platform, 4GB RAM, Windows 7 Ultimate. Please see AMD Publication ID 53395B for more information.
 The average power for the AMD GX-420CASOC is 10.8 Watts, determined by averaging the results of the measured average power of the SOC running the following benchmarks: 3DMark[®] 11, AMD Sys Stress Test CPU, AMD Sys Stress Test CPU 6 GPU, AMD Sys Stress Test GPU, Winbench[®] 99, CoreMark(Multi-thread), Game:Meat Boy, PCMark[®] 7, POV-Ray(all), Sandra 2011, Game: Street Fighter. System configuration: AMD GX-420CA @ 60°C, "Laine" development platform, 4GB RAM, Windows 7 Ultimate. Please see AMD Publication ID 53395B for more information."

DISCLAIMER

The information contained herein is for informational purposes only, and is subject to change without notice. While every precaution has been taken in the preparation of this document, it may contain technical inaccuracies, omissions and typographical errors, and AMD is under no obligation to update or otherwise correct this information. Advanced Micro Devices, Inc. makes no representations or warranties with respect to the accuracy or completeness of the contents of this document, and assumes no liability of any kind, including the implied warranties of non-infringement, merchantability or fitness for particular purposes, with respect to the operation or use of AMD hardware, software or other products described herein. No license, including implied or arising by estoppel, to any intellectual property rights is granted by this document. Terms and limitations applicable to the purchase or use of AMD's products are as set forth in a signed agreement between the parties or in AMD's Standard Terms and Conditions of Sale.

AMD, the AMD Arrow logo, AMD Radeon and combinations thereof are trademarks of Advanced Micro Devices, Inc. Windows is a registered trademark of Microsoft Corporation in the U.S. and/or other jurisdictions. Other product names used in this publication are for identification purposes only and may be trademarks of their respective companies. PID 54070-A
 © 2013 Advanced Micro Devices, Inc. All rights reserved.

