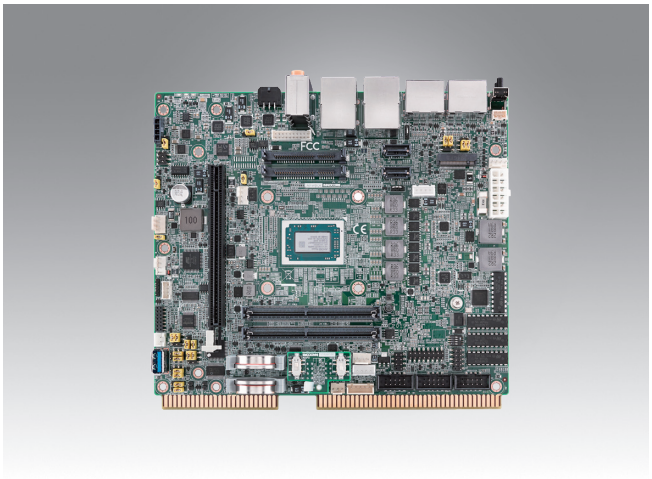
DPX®-S451

AMD Ryzen™ Embedded R2000 Gaming Platform



Features

- Very high performance AMD Ryzen™ Embedded R2000 processors
- Quad and dual core APUs up to 3.35 (3.7) GHz
- Radeon™ VEGA GPU with up to 8 compute units
- Four independent 4k monitors supported
- Comprehensive gaming features
- 12V DC single input or ATX power
- Full featured driver API for IO and security

Introduction

The DPX®-S451 is the latest addition to the proven DPX-S series of integrated gaming platforms. Based on the AMD Ryzen™ Embedded R2000 Series platform, the DPX-S451 uses AMD's latest high performance dual and quad core SOC devices with "Discrete-level Graphics" from the best-in-class integrated graphics core. Four independent monitors are supported via DisplayPort 1.4 / DP++ ports, and for even higher performance the standard PCI-Express x16 graphics card slot allows the S451 to support today's latest graphics cards for stunning games. A full set of I/O, COMs and security features designed specifically for gaming devices is also included, making the DPX-S451 an ideal high performance integrated platform for many gaming, amusement and kiosk applications.

Specifications

System	AMD Ryzen Embedded R2000 APUs
	Long life cycle 7 years availability
	Dual channel RAM up to DDR4-3200, ECC and non-ECC, 2 SODIMMs up to 32GB
Video (Integrated)	Integrated – Radeon VEGA graphics engine
	Four monitor support from APU
	Four DisplayPort DP 1.4/DP++ interfaces
	Direct X 12, OpenGL 4.6, EGL 1.5, Vulcan, HVEC & VP9 10-bit decode, H.264 8-bit decode
Video (Expansion)	Full speed Gen 3 PCIe graphics expansion slot x16 slot (x8 PCIe) Simultaneous operation of integrated and PCIe card graphics
Security	TPM security device on board
	Intrusion switch inputs (8 dedicated)
	BIOS customization
	iButton® connector for external iButton reader support
	Precision secure Real time clock device
	Protected I²C port
Software	Edge-to-edge drivers and Software API/SDK supporting Windows and Linux
	Code portability through consistent API with other Innocore boards
	Range of Advantech-Innocore software products for Gaming
CPU/Chipset	AMD Ryzen Embedded R2000 series Accelerated Processing Unit (APU) R2000 series Dual and Quad Core APUs up to 3.35 (3.7) GHz, up to 2MB L2 cache, 54W
Memory	2 x SODIMM sockets
	Up to 32GB DDR4 3200 MT/s SDRAM system RAM, ECC and non-ECC
BIOS	AMI APTIO UEFI BIOS
	BIOS can be write protected
	BIOS expansion ROM module

LAN	2 x Ethernet Gigabit LAN
	Full duplex operation
	Wake-On-LAN capability
Storage	2 x C-Fast™ / SATA 3 (jumper select)
	SATA 3 (up to 6Gb/s) header for HDD, SSD or SATA DOM
	1 x M.2 form factor for 2280 size module, 2 lane PCIe interface. NVME support
Ports	5 x RS232 (2 x fully featured, 3 x Tx/Rx)
	2 x CCTalk/RS232
	1 x TTL/RS232
	1 x ID003/TTL/RS232
	1 x RS485/RS232
	11 x USB (8 x USB 2.0, 3 x USB 3.0/2.0)
	2 x I²C ports (one protected)
	Audio out - SPKR (left, right and LF), line out 5.1 channels
iButton/GPIO	Two Bi-Directional GPIO headers for iButton, special purpose device, security module
Discrete I/O	32 ESD protected inputs
	32 OC Outputs (500mA, 50V)
	Of which 8 I/O ports can be configured as meter outputs with disconnect detect
Audio (line level)	HD 5.1 audio (line level)
	Front I/O panel jack connectors for: FL, FR, CE, LFE, RL, RR. On-board header for: Line In L & R, MIC In, SPDIF In, SPDIF Out (x2), Jack detect. Headphone connector
Audio (amplified)	On board 15W + 15W + 15W (FL, FR, LFE) Class D audio amps with bass boost
SRAM (NVRAM)	8192 KByte fast SRAM (2 banks) on PCIe bus
	Battery state software readable
TPM	TCPA/TPM 2.0 compliant security device on board
Watchdog Timer	Programmable time-out
EEPROM	32kByte user EEPROM (option for larger)

See overleaf for continued specification
Last updated: 18-Sep-2023

Specifications Cont.

Asset Tag	Unique, API readable serial number
Intrusion Detection	8x Intrusion detection input lines
	Operates with and without system active
	Logs date/time of last 254 events
	Logs system resets/brownouts as events
	EEPROM backup for 10 years retention
System Health Monitoring	Measurement of CPU core temp. With thermal trip. PWM fan control for system fans.
Power Fail Detect	External sensor input for advanced warning of AC power fail
Expansion	I²C, PCI-Express x16 Graphics card (x8 lanes)

Power	12V DC single input or ATX12V power supply Intelligent power control
Environment	Operating Temperature: 0 ~ 50 °C
	Storage Temperature: -20 ~ 85 °C
Approvals	CE, UKCA & FCC (Class A)
	RoHS 2, WEEE
Dimensions (excluding golden fingers)	200mm (W) x 170 mm (L) (6.7" x 7.9")

Benefits

- Best-in-Class integrated graphics and PCIe x16 for discrete graphics card
- Single integrated solution
- Designed for the Gaming Industry
- Backwards compatible with DPX-S series boards
- Small size
- Low power
- Long Lifecycle

Optional Accessories

- CFast™ cards, SATA DOM, SSD storage devices
- iButtons®, iButton reader
- Full system chassis
- Range of PCIe graphics cards
- I/O connector breakout boards
- Edge card connector set

Software Products

- Media Validation Toolkit SDK
- DPX Connector SDK
- DPX Diagnostics
- DPX SAS Engine

Front I/O

Front I/O

OEM Customization and Product Development

- Advantech-Innocore is part of the Advantech Co., Ltd. Group of Companies.
- Advantech-Innocore specializes in the fields of PC-based hardware design and software development. Our in-depth knowledge and global resources make us your ideal partner.
- Specifications subject to change. E&OE.
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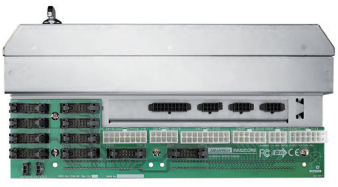
Rear I/O

DPX-S2451 Integrated Gaming System



DPX-S2451 w/ vertical connector board