

# SATA-IP Related Products Selection Guide









#### **Description of SATA-IP Related Products**

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## **SATA-IP Core Related Products List**

Product Name	Description	Application
HCTL-IP core (Host Controller IP core)	It substitutes whole control for SATA-IP with pure hard- wired logic, and can reduce CPU as well as can provide the best performance.	For high performance
AHCI-IP core	AHCI adapter function that is necessary to access from LinuxOS via AHCI device driver.	For SOC device
FAT32-IP core exFAT-IP core	✓ Support FAT32/exFAT file system.  ✓ FPGA can store data to drive and PC can read as file.  ✓ Pure hard-wired logic, no CPU necessary.  ✓ Needs HCTL-IP and SATA-IP.	FPGA – PC data exchange (w/o CPU)

- All solution requires SATA-IP core.
- Demo bit/sof file available for real board operation before purchase.

### **Summary of SATA-IP core related production**







# **Host Controller IP (HCTL-IP)**

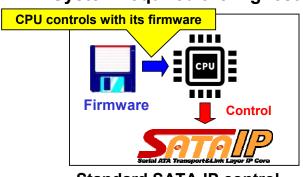
#### Feature

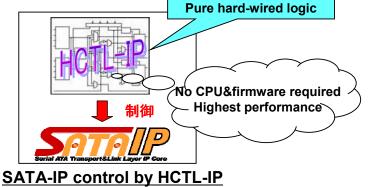
- Standard design use CPU to control SATA-IP.
- HCTL-IP is substitution of SATA-IP controller by pure logic core.
- Minimum latency by state machine provides the best performance.

### Application

- System without CPU or remove CPU resource for SATA control.

- System required the highest performance.





Standard SATA-IP control

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### **AHCI-IP**

#### Feature

- Converts SATA-IP upper layer interface to AHCI standard.
- SATA access is possible from embedded Linux via AHCI driver and AHCI-IP.

### Application

- Intel SOC family (with Angstrom) or Xilinx Zynq family (with PetaLinux)
- System requires SATA drive access under file-system (such as EXT3).







# File System IP (FAT32-IP/exFAT-IP)

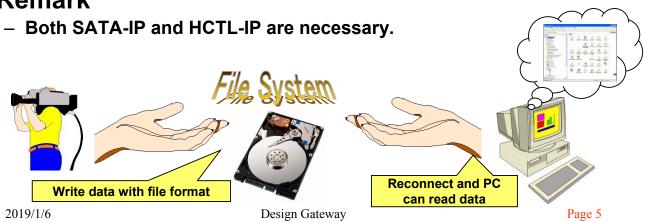
#### Feature

- Implements file system by hard-wired logic, no CPU necessary.
- Supports 3 commands of Format, FileWrite, and FileRead (for check).

### Application

- Record data to SATA drive, reconnect to PC, then PC can read data.









# Comparison of FAT32-IP and exFAT-IP

Item	FAT32-IP	exFAT-IP
Drive Capacity	64MB - 2TB	8GB - 64PetaB
File Size	32MB - 2GB	32MB - 512GB
Directory count	No (Root directry only)	16 directory
Resource (Intel) *1	700ALM+42Kbit(Ram)	1440ALM+98Kbit(Ram)
Resource (Xilinx) *2	240CLB+1.5BRAMTile	400CLB+3BRAMTile
Name Hash	Not supported	Supported
Check Sum	Not supported	Supported

### Comparison of FAT32-IP and exFAT-IP

- \*1 Device family = Arria10SX
- \*2 Device family = Kintex-Ultrascale





# Detail information of each products

#### HCTL-IP core datasheet

- Intel: http://www.dgway.com/products/IP/SATA-IP/Altera/dg\_sata\_host\_ip\_datasheet\_alt\_en.pdf
- Xilinx: http://www.dgway.com/products/IP/SATA-IP/dg\_sata\_host\_ip\_data\_sheet\_en.pdf

#### AHCI-IP core datasheet

- Intel: http://www.dgway.com/products/IP/SATA-IP/Altera/dg\_sata\_ahci\_ip\_datasheet\_altera\_en.pdf
- Xilinx: http://www.dgway.com/products/IP/SATA-IP/dg\_sata\_achi\_ip\_data\_sheet\_en.pdf

#### FAT32-IP core datasheet

- Intel: http://www.dgway.com/products/IP/SATA-IP/Altera/dg\_fat32ip\_sata\_data\_sheet\_intel\_en.pdf
- Xilinx: http://www.dgway.com/products/IP/SATA-IP/dg\_fat32ip\_sata\_data\_sheet\_en.pdf

#### exFAT-IP core datasheet

- Intel: https://dgway.com/products/IP/SATA-IP/Altera/dg\_exfatip\_sata\_data\_sheet\_intel\_en.pdf
- Xilinx: <a href="https://dgway.com/products/IP/SATA-IP/dg\_exfatip\_sata\_data\_sheet\_en.pdf">https://dgway.com/products/IP/SATA-IP/dg\_exfatip\_sata\_data\_sheet\_en.pdf</a>

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# **Revision History**

Rev.	Date	Description
1.0E	Feb-5-2018	English Version first release
1.1E	Dec-21-2018	exFAT-IP core release
1.2E	Jan-06-2019	Fixed FAT32-IP and exFAT-IP description