

Kestral™ FPGA Accelerator with Intel® Optane™ PMem DIMMs

Terabytes of PCIe attached memory tiered between DRAM and NAND flash

SMART Modular has built a new class of PCIe Add-in-card that enables memory expansion and acceleration capabilities using Intel Optane PMem DIMM and Intel FPGA.

Key Kestral Features

Form Factor	FHHL (Full-Height Half-Length) Dual Slot
Host Interface	PCIe-Gen3/Gen4 x16
Memory	4 DIMM slots with 2 independent channels. These can be populated by: <ul style="list-style-type: none">• 2 TB (4 x 512 GB) Intel Optane™ PMem DIMMs**• 1 TB (4 x 256GB) DDR4 LR DIMM or a combination of both
Compute	Quad Core ARM A53 with dedicated on-board 2GB DDR4 memory and 8GB Storage
Acceleration	Intel Stratix® 10 DX FPGA, enabled with multiple IP support for defining custom solutions
Power	Less than 150W TDP. Cooled by passive heatsink

**Current version of hardware support DDR-T based Intel Optane PMem in Memory mode only. [For more information refer here.](#)



Benefits

- Up to 2TB of memory expansion on PCIe-Gen4-x16 or PCIe-Gen3-x16 interface
- Accelerate selected algorithms through offloading for software-defined storage functions from Host CPU to FPGA.
- Supports multiple memory technologies like Intel Optane PMem DIMMs and DDR4 DIMMs
- Memory expansion and acceleration independent of motherboard (system) CPU.
- Field upgradeable for new algorithms, protocols, and providing full return on your investment.

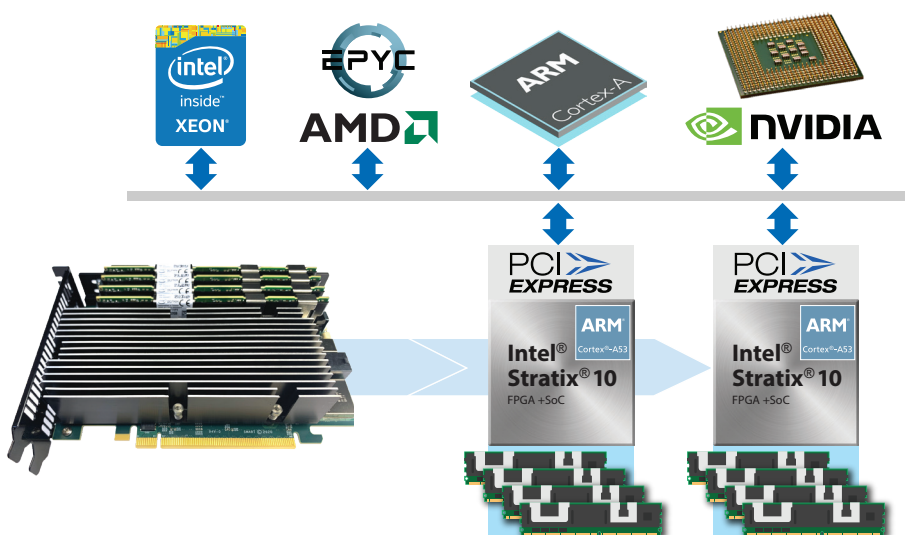
Ordering Information

SMART PMem Accelerator	
SMART Part Number	Description
STPE62TINA4DM2X*	PCIe-Gen3/Gen4-x16 memory accelerator with 2TB (4x512GB) Intel Optane PMem DIMM in Memory mode
STPE61XINA4DM2X*	PCIe-Gen3/Gen4-x16 memory accelerator with 1TB (2x512GB) Intel Optane PMem DIMM in Memory mode; And Up to 512GB DDR4 DIMM
STPE6XXINA4DM2X*	PCIe-Gen3/Gen4-x16 memory accelerator supporting up to 1TB (4x256GB) of DDR4 memory DIMMs

*Contact SMART Modular for discussion on potential customized variants.

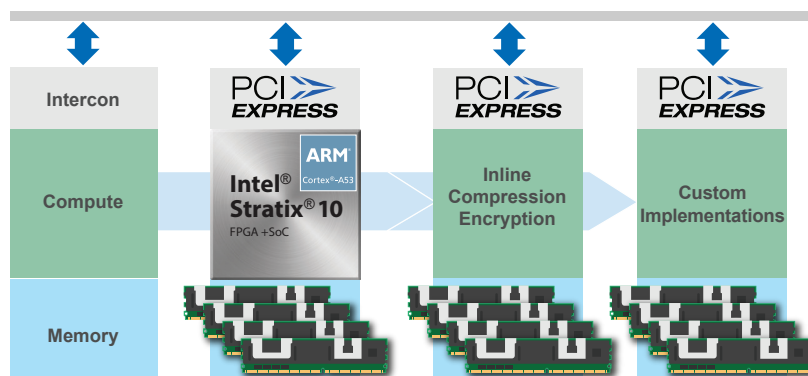
Memory Expansion

Enables all platforms to benefit from high density Intel Optane PMem DIMMs, and leveraging acceleration capabilities of Intel FPGA



Memory Acceleration

Offloads selected algorithms from the Host CPU by moving the compute near the data, to enable parallel execution of data-intensive algorithms.



For more information on Intel Optane Persistent Memory, [please go here](#).



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