

3U Compute Accelerator with Nallatech 510T FPGAs

The CA16005 Compute Accelerator with sixteen Nallatech 510T FPGA Accelerator Cards is employed in a variety of HPC applications including medical and defense. The CA16005 provides 44 Tflops and occupies only 3U of rack space. The system connects directly to one or four host server(s) through the latest technology PCIe x16 Gen3 connections. Four removable canisters house up to four full-height, full-length, PCIe x16 double-wide FPGAs and one half-length, half-height IO card each. The system is powered by three 3000-watt redundant power supplies and includes an IPMI-based system monitor.

PN: OSS-PCIe3-3UZ-20-4-X



Features

- 3U High
- Four removable canisters with four FPGAs each
- Optional 5th slot in each canister to support EDR IB or 10/40GbE
- Fully IPMI v2.0-compliant system monitoring capability
- Three 3000-watt power supplies
- Superior Cooling with eight temperature controlled fans
- Up to four PCIe x16 Gen3 cable connections to host server(s)

Specifications

Enclosure	<ul style="list-style-type: none"> • Dimensions: 17"W x 5.25" H x 38"D • Supports 16 full-length, full-height, 2-slot PCIe x16 GPU/PHIs • All 16 boards face the rear of the chassis (no IO bracket access) • Supports four half-height, half-length, single-wide PCIe x16 cards with IO bracket access • Removable front bezel with air filter • Front panel LEDs • Four rear panel PCIe x16 Gen3 cable interfaces • 4 individually-removable rear fans and 4 canister mounted fans • Weight: 92lbs when fully loaded with 16 accelerators
Main Backplane	<ul style="list-style-type: none"> • Four PCIe 3.0 x16 cable inputs to rear of enclosure • Four PCIe 3.0 x16 high-density connectors to each canister • Three PCIe 3.0 switches manage PCIe cross connects from cables to canisters • 2x RJ45 connectors for IPMI v2.0 System Monitor • 1x HD DB-9 serial port for IPMI network configuration • Optional RJ45 for basic SYSMON2 chassis monitor (not required when using IPMI System Monitor) • Supports bus-bar power distribution to the canisters through 8 high-power bladed connectors (2 per canister) • On board IPMI System Monitor & SYSMON2 connectors
Canister Backplane	<ul style="list-style-type: none"> • 4x PCIe 3.0 x16 double-spaced slots in 2 ranks of 2 GPUs each • 4x 8-Pin 12V power connectors for GPU/PHI AUX power cables • 1x PCIe 3.0 x16 single-wide slot for half-height, half-length IO cards • PCIe 3.0 switch
Power System	<ul style="list-style-type: none"> • 6000W load-sharing power subsystem • 100-120V, 220-240V, 2-34A input • Three 3U 3,000-watt front removable, hot-swap supplies • 15A breaker and IEC C19 power input at rear for each supply • All +12V power rails shared on copper bus bar delivery system
Power Supplies	<ul style="list-style-type: none"> • Each supply measures 1U (1.65") x 2.7" x 28.5" • 2+1 with full current sharing operation • +12V and +12V standby voltage outputs • Input Voltage 100-277VAC, 246-380VDC • Input current: 17-12.5A AC, 139-9A DC • Frequency: 50-60Hz • Max Output: 3060W
Power Cords	<ul style="list-style-type: none"> • The HDCA ships with C19-C20 156 PDU type power cords • 240V power cord for PDUs • OSS Part number: OSS-CBL-PWR-C20-C19-15A-2

Power Cords	<ul style="list-style-type: none"> • IEC C19 to IEC C20, Straight, 14AWG, 16A, 8' (2.44m) • OSS Part number: OSS-CBL-PWR-15P-C19-20A-2 • OSS Part number: OSS-CBL-PWR-CEU-C19-16A-2 • Other power cords available on request
System monitoring/alarming	<p>Fully IPMI v2.0 compliant monitoring, control & alarming system</p> <p>Temperature</p> <ul style="list-style-type: none"> • Monitors inlet & exhaust temperatures • Fan speed auto adjusts by internal air temperature • Alarm set-points for over temperature <p>Fans</p> <ul style="list-style-type: none"> • Monitors all system fan tachometers • PWM fan speed control from IPMI monitor • Alarms for slow or failed fans <p>Power</p> <ul style="list-style-type: none"> • Monitors supply I2C telemetry • Monitors output voltage rails • Alarms for voltages out of range • Alarms for supply failure <p>Add-in Cards</p> <ul style="list-style-type: none"> • Monitors add-in card I2C SM bus • Alarms for abnormal card telemetry for approved accelerators <p>Interface</p> <ul style="list-style-type: none"> • CLI or web GUI • Supports SNMP and RCMP • Remote chassis ID LED control for tagging chassis for service
Air Filter	<ul style="list-style-type: none"> • 30 ppi open cell polyfoam installed in bezel • Die-cut, removable, washable and replaceable
Cooling	<ul style="list-style-type: none"> • Four 80 x 80 x 38mm fans on the rear of the enclosure • One 80 x 80 x 38mm fan on the front of each canister (4 total) • All fans are 141CFM each in push-pull configuration • All fans PWM monitored and speed controlled by the IPMI system monitor • Rear fans hot-swap from rear of the chassis • Power supplies separately cooled from internal 25mm fans • Optional liquid cooling for approved accelerators available
Operating Environment	<ul style="list-style-type: none"> • Temperature range: <ul style="list-style-type: none"> • Operating: 10°—35°C • Storage: -40°—85°C • Humidity range: <ul style="list-style-type: none"> • Operating: 20% to 80% relative (non-condensing) • Non-operating: 5% to 95% relative (non-condensing) • Altitude range: <ul style="list-style-type: none"> • Operating: 0 to 10,000 ft. • Storage: 0 to 50,000 ft.
Agency compliance	<p>Designed to meet the following agency certifications with testing currently pending:</p> <ul style="list-style-type: none"> • FCC - Part 15 of the FCC Rules, Class A, 47CFR • Canada ICES-003, issue 4, Class A • UL/IEC 60950-1 • Canada: CSA C22.2 No. 60950-1 • Argentina: IEC60950-1 • Japan: VCCI, Class A • Australia/New Zealand AS/NZS CISPR 22, Class A • IEC 60950-1 (CB Certificate and CB Test Report) • CE Mark (EN55022 Class A, EN60950-1, EN55024, EN61000-3-2, EN61000-3-3) • CISPR 22, CISPR 24, Class A • CE Emissions 2004-108EC • RoHS compliance (Directive 2002/95/EC) • CCN NWGQ, NWGQ7
Nallatech 510T FPGA Accelerator Specs	
FPGAs	2 Arria 10 1150 GX FPGAs
DDR4 Memory	85GB/s (per FPGA)
Memory Bandwidth	290 GB/s
Peak Performance	2.8 Tflops
Write Peak HMC Bandwidth	30GB/s (per FPGA)
Read Peak HMC Bandwidth	30GB/s (per FPGA)