***Block Diagram***

Needs updated diagram to show canister and connections

Note: at some point we will need to identify backplane profiles



***Product Picture***

**½ ATR Chassis: 3U OpenVPX Card Compatible**

*3U chassis in Half ATR configuration, VITA 65 OpenVPX/SOSATM-ready backplane, 6/8 slots (2 reserved for power supply),optional removable 4-drive canister, 10G/40G/100G BASE-KR capable, card face I/O routed to front panel.*

* A member of GMS “ATR+” 3U and 6U OpenVPX chassis with max I/O, cooling, and flexibility
* Supports GMS X9 “Venom” OpenVPX 3U modules
* Supports industry-standard ANSI/VITA 65 OpenVPX modules (requires GMS-created custom backplane for user I/O)
* Available in ATR “tall” or “short” configurations - eight slots in “tall”; six slots in “short”
* Industry-first fiber optic and RF front-panel card I/O routed to chassis front panel
* High-speed inter-slot PCIe Gen 4 communication embedded into backplane
* 10G/40G/100G BASE-KR capable
* Dual redundant isolated (max 840 W) power supplies or single (max 1000 W) at 110 VAC; +28 VDC optional
* Superior heat dissipation through forced-air cooling and rear sidewall heat exchangers
* High-CFM fans for maximum total cooling: 2000 W in “tall” (8 fans), 800 W in “short” (6 fans)
* Optional carbon fiber construction improves heat transfer and reduces system weight by up to 30%
* Optional removable storage canister with SATA/NVMe SSDs (8x M.2 or 4x 2.5” 7mm SSDs)
* Face panel supports I/O to six cards, including from cards’ front panel
* Three mounting options: DZUS, flange, side brace/gusset

**SPECIFICATIONS**

* Size: 4.88” W x 12.30” D x 10.40” H (“tall”)
 7.62” H (“short”)
* Weight (est): 6 lbs (“tall”)
 4.5 lbs (short”)
* MIL-STD: MIL‑STD‑810G, MIL‑STD‑1275D, MIL‑STD‑461F MIL‑S‑901D
* Temperature: -40° C to +85° C
* Ruggedness Available up to GMS ruggedization level R5

**SYSTEM OVERVIEW**

GMS’s family of ATR+ 3U OpenVPX chassis are perfect for today’s high performance applications that require massive power and heat dissipation, with provisions for extensive copper, fiber, and RF I/O. Each chassis is optimized for use with GMS’s line of X9 “Venom” OpenVPX modules, which include a vast array of high speed I/O – 10G/40G/100G BASE-KR, PCIe Gen 4, and ThunderboltTM 4 technology. These chassis are also compatible with ANSI/VITA 65 OpenVPX modules, although a custom backplane will be needed for non-standard profiles.

These 3U fully ruggedized conduction-cooled chassis are forced-air cooled where heat is transferred from dedicated per‑slot sidewall heat exchangers, absorbed by forced-air cooling, then exhausted to the ambient environment from the rear fan assembly; a maximum of 2000 W can be dissipated. Rear air inlet and egress keeps hot air and fan noise away from operators in confined spaces such as armored vehicles or airplane cabins. The rear fans incorporate GMS TwoCool™ technology, have replaceable filters, and can be intelligently controlled via I2C while also providing tachometer feedback. GMS ReliHealth™ can also incorporate the fans into the health monitoring schema.

Fully sealed, two slots are reserved for power supply use; the remaining slots are available for CPU or payload. All CPU/payload slots include high-speed PCIe Gen 4 communication across the backplane. Front panel I/O from the cards offers more data choice with copper, fiber, or RF signals routed to the chassis face plate. The active backplane includes an integral PCI Express Gen 4 switch, BMC and shelf monitor.

For continuous operation of the equipment and to minimize the chance of a complete shutdown due to power supply failures, the chassis are configured with dual redundant load-sharing power supplies. MIL-STD-1275D compliant, the supplies are fully isolated and floating (no common ground) and outputs provide over-voltage and over-current protection. Supplies are based on GMS’s proven Power Conditioning Module technology which has been deployed on literally thousands of high-reliability platforms. Supplies provide remote control IPMB/PMBus connections per OpenVPX and SOSA™ requirements.

The “tall” chassis includes a SATA/NVMe SSD removable canister, with space for eight M.2 SSDs or four 2.5” 7mm SSDs, for mission recording and portability. With the removable canister, tremendous amounts of data can be physically moved between systems. At current densities, the canister provides 32 TB using M.2 devices or 120 TB using 2.5” U.2 (NVMe) drives.

The chassis are fabricated using aluminum alloy or optional carbon fiber technology to improve thermal conductivity and to significantly reduce system weight by as much as 20-40% over aluminum. Added benefits include increased system strength and rigidity for improved shock/vibration performance.

Mounting options include DZUS, flange, and side gusset (vetronics style).

**FEATURES**

|  |  |  |
| --- | --- | --- |
|  | **3U** | **6U** |
|  | **VPX3-MAX**½ ATR(Tall) | **VPX3-PLUS**½ ATR (Short) | **VPX6-MAX**Full ATR(Tall) | **VPX6-PLUS**Full ATR(Short) |
| # Removable Drive Bays | 1 | - | 2 | - |
| # Slots – Total | 8 | 6 | 8 | 6 |
| # Slots – Payload or I/O | 6 | 4 | 6 | 4 |
| # Power Supply slots | 2 | 2 | 2 | 2 |
| Power SuppliesRedundant or N+1 load-sharing | 2x 840 Wor1x 1000 W | 2x 800 Wor1x 840 W | 2x 1680 Wor1x 2000 W | 2x 1600 Wor1x 2080 W |
| Voltage | 110 VACor+28 VDC | +28 VDC(only) | 110 VACor+28 VDC | 110 VACor+28 VDC |
| Fans with replaceable filters | 8cooling to 2000 W | 6cooling to 800 W | 16cooling to 4000 W | 12cooling to 1600 W |
| Dimensions | 4.88” W10.40” H12.30” D | 4.88” W7.62” H10.30” D | 10.12” W10.40” H12.30” D | 10.12” W7.62” H10.30” D |
| Weight – chassis only (est.) | 6 lbs | 4.5 lbs | 12 lbs | 9 lbs |
| Mounting Options | DZUS, flange, side brace / gusset |
| Construction | Aluminum alloy; Carbon Fiber optional |

**RUGGEDIZATION LEVELS**

|  |  |  |  |
| --- | --- | --- | --- |
|  | TEMP | SHOCK | VIBRATION |
| RUGGED 1 | 0° C to +55° C | 20 G | 0.0001 g2/Hz |
| RUGGED 2 | -20° C to +55° C | 20 G | 0.0008 g2/Hz |
| RUGGED 3 | -20° C to +75° C | 52 G | 0.0300 g2/Hz |
| RUGGED 4 | -40° C to +85° C | 100 G | 0.0300 g2/Hz |
| RUGGED 5 | -40° C to +85° C | 100 G | 0.1125 g2/Hz |