

3U VPX ATR Chassis: 3-9 Slots, High Thermal Performance

Customizable 3/5/7/9 Slots for Conduction Cooled Cards, 200-300W

LCR Embedded Systems' 3U VPX/VME/cPCI series of sealed Chassis and Backplane Assemblies have been designed for compact aerospace and UAV applications that require state-of-the-art power dissipation technology. This family of size-scalable chassis are ideal for advanced SWaP-C military systems operating in hostile air environments and applications that require significant processing power.



- Forced-air heat exchanger sidewalls, top cover, rear panel
- For dry-air, contaminant-free, high-wattage applications
- Standard rugged or high-airflow military PX2 rear fans
- Overhead internal forced-air recirculation for payload hot spots
- Oversized output capacity military power supply options

Backplane

Military cPCI Serial R.2.0
VITA 46 Military VPX (3-5-7-9 Slot, 3U 1" pitch)

Conduction-cooled slots only for conduction-cooled ANSI-VITA 48.2 wedgelock boards, support 0.8/0.85" pitch eurocards

Power

Max P/S Power: 575 Watts, 28 VDC 475 Watts)
P/S Input Options: 28/48/72/270 VDC ± 30%

Autorange 90-132/180-264 VAC RMS @ 47-880 Hz
3-Phase 200 VAC @ 47-880 Hz ± 30%

Front Panel I/O

6 power pins (13 Amp), 382 I/O pins (5 Amp)
Custom front panel/connectors or standard MIL-C38999

Up to 8 indicators for status monitoring (on/off, board failure, input voltage, temperature, etc.)

Physical/Thermal

	3-Slot	5-Slot	7-Slot	9-Slot
Width-Height-Depth/Weight				
mm/Kg	134 x 233 x 234/5.0	134 x 233 x 285/5.8	134 x 233 x 336/6.6	134 x 233 x 387/7.5
inch/lb	5.28 x 9.17 x 9.21/11.02	5.28 x 9.17 x 11.22/12.79	5.28 x 9.17 x 13.23/14.55	5.28 x 9.17 x 15.24/16.53
Front Panel (mm/inch)	96 x 140/3.78 x 5.51	96 x 140/3.78 x 5.51	96 x 140/3.78 x 5.51	96 x 140/3.78 x 5.51
Internal Fans (CFM)	13.5	27	40	54
Rear Fan Rugged/PX2 (CFM)	120/130 or 240	120/130 or 240	120/130 or 240	120/130 or 240
Thermal Resistance (ΔT/W)	0.15 °C	0.12 °C	0.11 °C	0.10 °C
Payload Power (W)	200	250	270	300

Can be cold-plate mounted to increase power dissipation by 5%

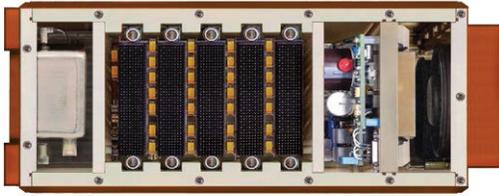
Heat Pipe Options Available on Other Models

Environmental/Performance

Operating/Storage Temp: -40 to 85 °C / -55 to 100 °C
MTBF: 25° GB 86,000 Hours / 65° AIC 28,000 Hours

Sealed against dry air
MIL-STD-461E/810F EMI/EMC and Environmental

Front-to-Back Layout and Partitioned Chassis Interior



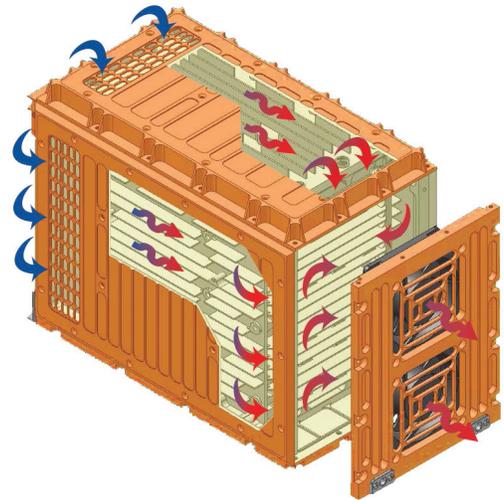
All chassis are internally divided into four independent, isolated partitions. From the front, these include the I/O section, the card cage, the power supply section, and two exhaust fans. This isolates the card cage, which provides protection, improves EMI/EMC performance, and reduces the effects of power supply heat and electrical noise on system operations.

Top/Sidewalls, Rear Panel Heat Exchangers for Superior Cooling

Heat within the enclosure is conducted to hollow sidewalls, top cover, and rear panel forced-air heat exchangers where it is dissipated to the environment.

Low-profile internal recirculation fans ensure that dry air is forced across conduction or air-cooled payload modules, minimizing hot spots and dissipating heat homogeneously while maintaining the isolation of the card cage.

This enables the enclosure to dissipate up to 300W of power in the 9-Slot version. Models featuring heat pipes are also available upon request.



VPX/CompactPCI: Choose Your Slot Count



This chassis is available in 3, 5, 7, and 9-Slot versions. All versions share the same general chassis architecture, power supply, and front/rear panels, providing increased flexibility and cost-effective upgrades to match growing application demands.

Chassis metalwork is made of precision-machined aeronautical aluminum with MIL-DTL-5541F chromate coating, and all panels and joints incorporate EMI gaskets. Enclosures can be provided in a variety of colors as well.

All 3U backplanes integrate a functional temperature supervisory unit (TSU) that controls power supply and fan operation. Remote opto-isolated control switches for 'Battle-short' and chassis power supply 'on/standby' are also provided as standard.

Part Number: LCR-[Form-factor]-3U-[Slot-count]-ATR-FB
Form-factor: VPX, CPCI
Slot-count: 03, 05, 07, 09

Example: LCR-CPCI-3U-05-ATR-FB = CompactPCI, 5-Slot Chassis

Contact sales@lcrembedded.com for more information.

3U VPX ATR Chassis: 3-9 Slots, Heat Pipes for Thermal Load

Customizable 3/5/7/9 Slots for Conduction Cooled Cards, 300-500W

LCR Embedded Systems' 3U VPX/VME/cPCI-HP series of Chassis and Backplane Assemblies have been designed for compact aerospace and UAV applications that require state-of-the-art power dissipation technology. This family of size-scalable chassis are ideal for advanced SWaP-C military systems operating in hostile environments and applications that require significant processing power.

- Forced-air heat exchanger sidewalls, top cover, rear panel
- Heat pipes provide exceptional cooling for high-power cards
- For dry-air, contaminant-free, high-wattage applications
- Standard rugged or high-airflow military PX2 rear fans
- Overhead internal forced-air recirculation for payload hot spots



Backplane

Military cPCI Serial R.2.0
VITA 46 Military VPX (3-5-7-9 Slot, 3U 1" pitch)

Conduction-cooled slots only for conduction-cooled ANSI-VITA 48.2 wedgelock boards, support 0.8/0.85" pitch eurocards

Power

575 Watts (28 VDC/475 Watts), 825 Watts (28 VDC/775 Watts)
P/S Input Options: 28/48/72/270 VDC ± 30%

Autorange 90-132/180-264 VAC RMS @ 47-880 Hz
3-Phase 200 VAC @ 47-880 Hz ± 30%

Front Panel I/O

6 power pins (13 Amp), 382 I/O pins (5 Amp)
Custom front panel/connectors or standard MIL-C38999

Up to 8 indicators for status monitoring (on/off, board failure, input voltage, temperature, etc.)

Physical/Thermal

	3-Slot	5-Slot	7-Slot	9-Slot
Width-Height-Depth/Weight				
mm/Kg	144 x 258 x 255/5.2	144 x 258 x 305/6.0	144 x 258 x 356/6.8	144 x 258 x 407/7.7
inch/lb	5.68 x 10.2 x 10.0/11.46	5.68 x 10.2 x 12.0/13.23	5.68 x 10.2 x 14.0/14.99	5.68 x 10.2 x 16.0/16.98
Heat Pipes	4	8	12	16
Front Panel (mm/inch)	96 x 158/3.78 x 6.22			
Internal Fans (CFM)	13.5	27	40	54
Rear Fan Rugged/PX2 (CFM)	130 or 240	130 or 240	130 or 240	130 or 240
Thermal Resistance (ΔT/W)	0.09 °C	0.075 °C	0.066 °C	0.060 °C
Payload Power (W)	320	400	450	500

Can be cold-plate mounted to increase power dissipation by 5%

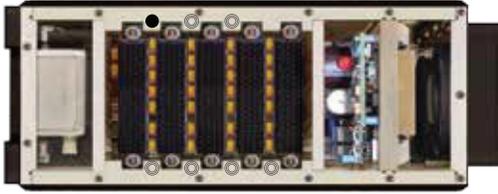
Other Models Available Without Heat Pipes

Environmental/Performance

Operating/Storage Temp: -40 to 85 °C / -55 to 100 °C
MTBF: 25° GB 86,000 Hours / 65° AIC 28,000 Hours

Sealed against dry air
MIL-STD-461E/810F EMI/EMC and Environmental

Front-to-Back Layout and Partitioned Chassis Interior

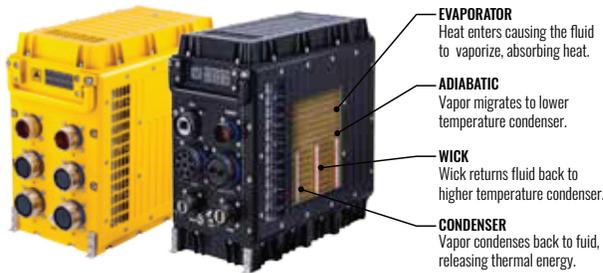
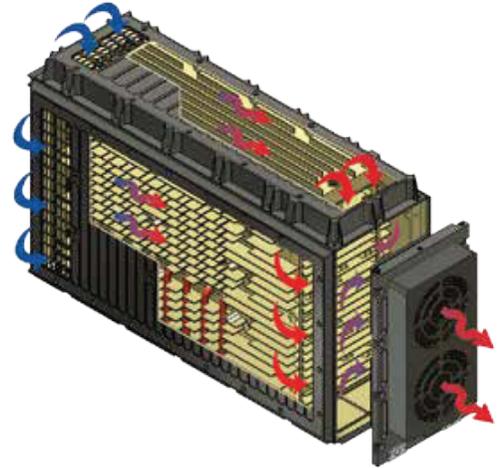


All chassis are internally divided into four independent, isolated partitions. From the front, these include the I/O section, the card cage, the power supply section, and two exhaust fans. This isolates the card cage, which provides protection, improves EMI/EMC performance, and reduces the effects of power supply heat and electrical noise on system operations.

Top/Sidewalls, Heat Pipes, Rear Panel Heat Exchangers for Superior Cooling

Heat within the enclosure is conducted to hollow sidewalls, top cover, and rear panel forced-air heat exchangers where it is dissipated.

Low-profile internal recirculation fans ensure that dry air is forced across conduction or air-cooled payload modules, minimizing hot spots and dissipating heat homogeneously while maintaining the isolation of the card cage.



In addition, heat pipes provide even further minimization of hot spots and dissipation, enabling the enclosure to dissipate up to 500W of power in the 9-Slot version.

VPX/CompactPCI: Choose Your Slot Count



This chassis is available in 3, 5, 7, and 9-Slot versions. All versions share the same general chassis architecture, power supply, and front/rear panels, providing increased flexibility and cost-effective upgrades to match growing application demands.

Chassis metalwork is made of precision-machined aeronautical aluminum with MIL-DTL-5541F chromate coating, and all panels and joints incorporate EMI gaskets. Enclosures can be provided in a variety of colors as well.

All 3U backplanes integrate a functional temperature supervisory unit (TSU) that controls power supply and fan operation. Remote opto-isolated control switches for 'Battle-short' and chassis power supply 'on/standby' are also provided as standard.

Part Number: LCR-[Form-factor]-3U-[Slot-count]-ATR-FB-HP
Form-factor: VPX, CPCI • Slot-count: 03, 05, 07, 09

Example: LCR-CPCI-3U-05-ATR-FB-HP = CompactPCI, 5-Slot Chassis
Contact sales@lcrembedded.com for more information.

3U VPX ATR Chassis: 5/6 Slots, Sealed, Cooled with Heat Pipes

Completely Sealed for Harsh or Contaminated Environments, 150W of Cooling

LCR Embedded Systems' 3U VPX/VME/cPCI-HP series of sealed Chassis and Backplane Assemblies have been designed for compact aerospace and UAV applications that require state-of-the-art power dissipation technology. This family of size-scalable chassis are ideal for advanced SWaP-C military systems operating in contaminated air environments and applications that require significant processing power.

- Double wall floating heat sinks with multiple airflow tunnels
- 18 heat pipes, extended fins double conventional heat dissipation
- For harsh or contaminant-laden, medium-wattage applications
- Silent, no external fans, ideal for submarines/operator proximity
- Overhead internal forced-air recirculation for payload hot spots



Backplane

VME64X or CompactPCI Serial R.2.0
VITA 46 Military VPX (5 Slot/1" pitch or 6 Slot/0.085")

Conduction-cooled slots only or MCS: Slot-by-slot user configured card cage allows intermixing of conduction and air-cooled cards

Power

450 Watts to 825 Watts
P/S Input Options: 28/48/72/270 VDC ± 30%

Autorange 90-132/180-264 VAC RMS @ 47-880 Hz
3-Phase 200 VAC @ 47-880 Hz ± 30%

Front Panel I/O

6 power pins (13 Amp), 382 I/O pins (5 Amp)
Custom front panel/connectors or standard MIL-C38999

Up to 8 indicators for status monitoring (on/off, board failure, input voltage, temperature, etc.)

Physical/Thermal

Width-Height-Depth/Weight	
mm/Kg	214 x 230 x 266/8
inch/lb	8.42 x 9.06 x 10.5/17.6
Heat Pipes	18
Front Panel (mm/inch)	125 x 140/4.92 x 5.51
Internal Fans (CFM)	54
Thermal Resistance (ΔT/W)	0.214 °C
Payload Power (W)	150
Slots	5 (1" pitch) or 6 (0.085" pitch)

Cold-plate mounting can increase power dissipation by 15%.

Other models available without fins or environmental sealing.

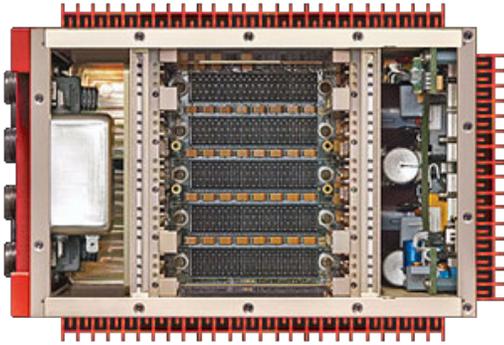
External fans can greatly increase power dissipation.

Environmental/Performance

Operating/Storage Temp: -40 to 85 °C / -55 to 100 °C
MTBF: 25° GB 82,000 Hours / 65° AIC 27,000 Hours

Sealed against contaminated air
MIL-STD-461E/810F EMI/EMC and Environmental

Side-to-Side Layout and Partitioned Chassis Interior



This is a sealed, 1" pitch, dry-air 3U chassis that incorporates extended cooling fins, 18 super conducting heat pipes and air re-circulation fans inside. This zero-maintenance ATR is ideal for medium-wattage applications where ambient air is laden with contaminants.

All chassis are internally divided into three independent, isolated partitions including the I/O section, the card cage, and the P/S section. This isolates the card cage, which provides protection, improves EMI/EMC performance, and reduces the effects of P/S noise on system operations.

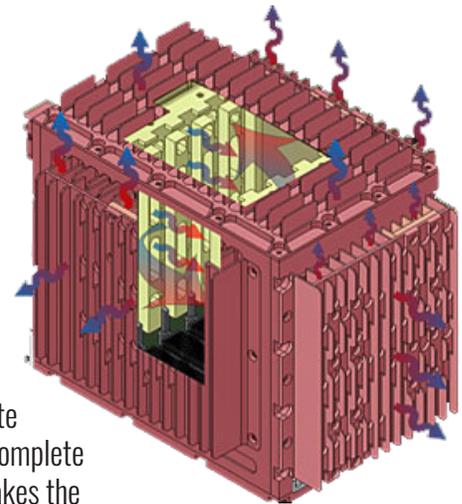
Extended Fins, Heat Pipes for Superior Cooling in a Sealed Chassis

Heat generated within the enclosure is dissipated by a combination of conduction, radiation and free-air convection through the chassis metalwork and double-wall extended fins to the ambient environment.

18 integrated heat pipes provide fast passage for heat to exit the internal card cage. Internal air recirculation fans ensure constant airflow across payload modules.



Heat pipes minimize hot spots and dissipation, and enable the enclosure to dissipate up to 150W of power despite complete environmental sealing. This makes the chassis perfect for medium wattage sealed applications that demand good passive cooling capabilities. This silent, external-fanless model is competitive vs forced air ATRs and ideal for submarine, proximity-to-operator, and deploy-and-forget applications.



This chassis is available in a 5 slot version only (1/2 ATR), supporting VME, CompactPCI, and VPX backplanes and 1" board pitch, with 6 slots available for 0.085" board pitch. The chassis supports conduction-cooled cards although an internal fan is present for internal air recirculation.

A total PSU power of up to 825 watts may be installed. Custom modifications can be designed upon customer request.



Part Number: LCR-[Form-factor]-3U-[Slot-count]-ATR-SS-HP
Form-factor: VPX, CPCI • Slot-count: 03, 05, 07, 09

Example: LCR-CPCI-3U-05-ATR-SS-HP = CompactPCI, 5-Slot Chassis
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