

CM-ATR-3U/SERIES

VPX/VME/CPCI

SMALL PACKAGE, HIGH PERFORMANCE
3U MILITARY ATR CHASSIS



DESIGNED FOR **COST EFFECTIVE**
MILITARY AEROSPACE PLATFORMS
AND UAV APPLICATIONS.

READY FOR STATE-OF-THE-ART SMALL
FORMAT SYSTEMS THAT DEMAND **LOW**
WEIGHT AND **COMPACT DIMENSIONS**.

HIGH POWER PSUs MATCHED WITH EXTREME
THERMAL DISSIPATION CAPABILITIES.

MIL-STD CERTIFIED BY INDEPENDENT LABS FOR
IMMEDIATE DEPLOYMENT IN THE FIELD.



LEARN MORE: WWW.CMCOMPUTER.COM
OR CALL : +34 954 253 116 | +34 954 253 119

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contact CM Computer European Headquarters at cm@cmcomputer.com.

WHEN SIZE & SPACE MATTER

Our latest true military COTS 3U range of ATR enclosures is expressly released to complement the existing family of CM 6U chassis on the market.

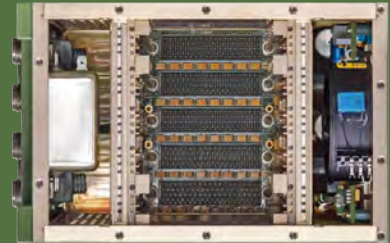
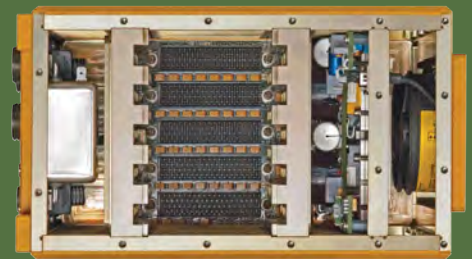
These highly optimized 3U chassis incorporate all proprietary technologies, features and well established mechanical and electrical solutions developed during the past 20 years.

High power 3U military applications (up to 5-slots) can now benefit from our improved chassis power and thermal dissipation.

Payload cooling is carried out through a combination of cross-flow forced air heat exchangers, internal air convection and conduction through the chassis metal structure. This significantly overcomes thermal contact resistance issues between module wedge-locks and card-cage slots.

System engineers and integrators will benefit from increased payload MTBF, reduced board hot spot temperatures and assured military operational temperature range from -40°C to +85°C.

Full military design, certified components, impeccable finish and highest quality manufacturing are provided off-the-shelf to deliver a compact, reduced SWaP 3U series of enclosures that will satisfy the most demanding critical military applications.



S+FAC	WEIGHT* 3.9 KG	HES	WEIGHT* 4.8 KG
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* EXCLUDING PAYLOAD & MOUNTING TRAY

SEALED & OPEN 3U COTS MODELS

CM manufactures three 5-slot 3U military chassis models to suit all applications.

All models integrate the same PSU and Backplane electronics.

CM-ATR-3U/S: Standard Sealed contaminant-free enclosure.

CM-ATR-3U/HES: Sealed, contaminant-free enclosure fitted with 3 integrated heat exchangers.

CM-ATR-3U/FAC: Flow-through Airflow open enclosure.

An optional low profile Mounting Tray with quick release system is also available to facilitate easy deployment in the field.

"Today CM customers can develop the most advanced 3U compact military electronic systems with confidence while working at low operational payload temperatures."



CM-ATR-3U/FAC

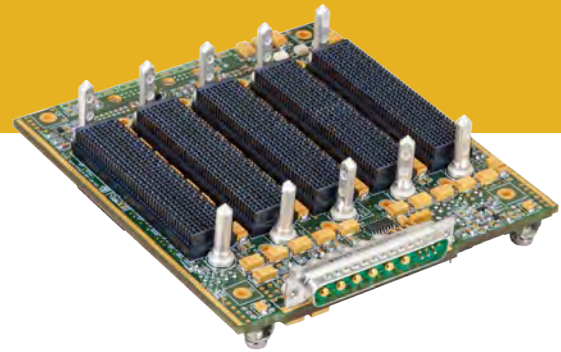
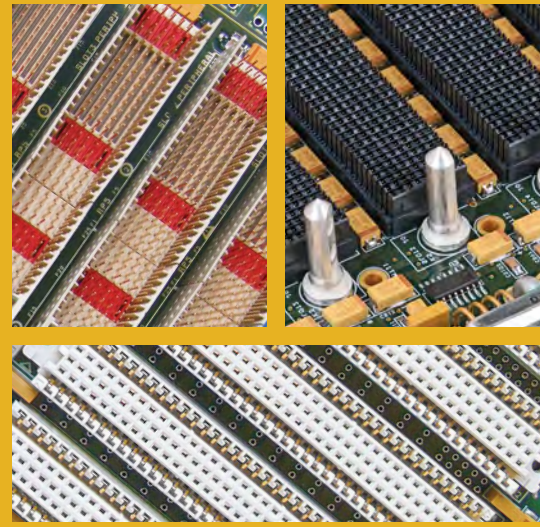
CM-ATR-3U/HES

0 50mm

SMALL BACKPLANES THAT DO MORE

CM 3U enclosures incorporate a versatile universal 'MCS' 5 slot card-cage that accepts all off-the-shelf Conduction Cooled and Air Cooled 3U modules. VME, VPX & cPCI slots are tailored for 1 inch pitch standard with full compatibility with 0.8 inch pitch 3U modules. All Backplanes integrate a functional Temperature Supervisory Unit (TSU) that controls Power Supply and Fan operation. Remote optoisolated control switches for 'Battle-short' and chassis PSU 'on/standby' are also fitted as standard.

CM military Backplanes allow unlimited pins I/O wiring capability and flexible top & bottom system integration. Wiring is facilitated by a standard 25 mm bottom cavity clearance to avoid requiring a custom designed Backplane. All 3U ATR models offer an extended front panel user I/O connector area. CM can supply a factory front panel fitted with MIL-C-38999 connectors or a custom front panel that includes customer silk-screening and logo.



CM 3U chassis provide internal card-cage airflow recirculation. An 84 CFM rear fan pack is fitted as standard in the sealed HES chassis (27 CFM in open FAC cooled version). An optional 130 CFM rear AC fan pack can be selected for the sealed HES chassis (65 CFM in open FAC version). Fan and Power Supply have independent input voltage operation. Rear fan finger guards are integrated in chassis metalwork.

DEMONSTRATED CAPABILITIES

It has been demonstrated that the success of highly critical military aerospace systems requires the most advanced chassis available in the market. This conclusion has led CM to develop the finest state-of-the-art military chassis products.



CM-ATR-25
5 SLOT 6U

CM-ATR-35
7 SLOT 6U

CM-ATR-45
12 SLOT 6U

CM MILITARY 6U ATR SERIES HIGHLIGHTS

- Available in 1/2, 3/4 & 1 ATR size
- Up to 1.5 kW total Power Dissipation
- Up to 150 Watts per slot
- 2 User defined PSU 100W DC outputs
- 25°C less than heat exchanger ATRs
- 50°C less than conventional ATRs

"Meeting the demand for true high power COB solutions."

3U ATR ORDERING INFORMATION

Part Number Ordering: **CM-ATR-3U/CT/B/I/W/FP/TC/BC/CS/F/C**

Example: CM-ATR-3U/HES/VPX/90-264VAC/C-575W/UDP/STC/SBC/MCS/STDF-AC/B

/CT » ENCLOSURE COOLING TECHNIQUE

CM-ATR-3U/S: Standard Sealed.
CM-ATR-3U/HES: Sealed with 3 Heat Exchangers fitted in sidewalls & rear panel.
CM-ATR-3U/FAC: Flowthrough Air Cooled (open).

/B » BACKPLANE TYPE

VME64x: Military VME64x Backplane (5 Slot 3U).
cPCI: Military Compact PCI Backplane (5 Slot 3U).
VPX: VITA 46 Military VPX Backplane (5 Slot 3U).

/I » PSU INPUT POWER VOLTAGE

28VDC: 28 VDC Input.
48VDC: 48 VDC Input.
270VDC: 270 VDC Input.
90-264VAC: Autorange 90-264 VAC @ 47-880 Hz Input.
200VAC-3Ph: 200 VAC 3 Phase @ 47-880 Hz Input.

/W » POWER SUPPLY UNIT WATTS*

A-475W: 28 VDC input only (extra power assigned to +5 VDC Output).
A-575W: All PSUs except 28 VDC input (extra power assigned to +5 VDC Output).
B-450W: 28 VDC input only (extra power assigned to +3.3 VDC Output).
B-550W: All PSUs except 28 VDC input (extra power assigned to +3.3 VDC Output).
C-475W: 28 VDC input only (extra power assigned to +12 VDC Output).
C-575W: All PSUs except 28 VDC input (extra power assigned to +12 VDC Output).

/FP » FRONT PANEL LAYOUT

CMP: Standard CM Computer front panel fitted with MIL-C-38999 connectors.
UDP: User defined front panel layout (requires customer drawings).

*See PSU DC Output details in PSU Options Table.

/TC » CHASSIS TOP COVER

STC: Standard, low-profile Top Cover. Vertical wiring clearance 13mm.
HTC: Extended, high-profile Top Cover. Vertical wiring clearance 35mm.
HETC: Heat Exchanger Top Cover. Vertical wiring clearance 13mm.

/BC » CHASSIS BOTTOM COVER

SBC: Standard, low-profile Bottom Cover. Vertical wiring clearance below backplane 25 mm.
HBC: High-profile Bottom Cover. Vertical wiring clearance below backplane 40 mm.

/CS » CHASSIS CARD-CAGE SLOT

MCS: Universal Card-cage Slots (Mixed Conduction-cooled & Air-cooled Boards).
CCS: Conduction cooled Card-cage Slots (Conduction-cooled Boards Only).

/F » REAR-MOUNTED FAN ASSEMBLY**

STDF-DC: 2x 42 CFM DC Rugged Fans (HES) or 1x 27 CFM DC Rugged Fan (FAC).
STDF-AC: 2x 47 CFM 115 VAC @ 400 Hz Rugged Fans (HES).
F115-400: Optional 2x 65 CFM Rotron PX2 Military Fans fitted for 115 VAC @ 400 Hz (HES), 1x 65 CFM Rotron PX2 Military Fan (FAC).
F200-400: Optional 2x 100 CFM Rotron PX2 Military Fans fitted for 200 VAC 3-phase @ 400 Hz (HES), 1x 100 CFM Rotron PX2 Military Fan (FAC).

/C » CHASSIS COLOR

B: Black, G: Navy Grey, E: Army Dark Earth, W: White, R: Red, PT: Platinum, YW: Yellow, GN: Green, BLU: Dark Blue, CR: Chromate MIL-C-5541 or O: Other (user defined).



**Rugged Fans are long life and are fitted with aluminum housing. Operating range -10°C to +70°C.
**Full Military PX2 AC Fans operating range is -54°C to +125°C.



SPECIFICATIONS GUIDE

	CM-ATR-3U/HES	CM-ATR-3U/FAC	CM-ATR-3U/S
WIDTH	163 mm	153 mm	
HEIGHT	215 mm	225 mm	
DEPTH	290 mm	248 mm	
WEIGHT	4.8 Kg	3.9 Kg	
MAX PSU PWR	575 Watts (28 VDC 475 Watts)	575 Watts (28 VDC 475 Watts)	
PSU V-INPUT	28 VDC ±30%, 48 VDC ±30%, 270 VDC ±30%, Autorange 90-132 VAC RMS & 180-264 VAC RMS 47-880 Hz, 3-Phase 200 VAC ±30% 47-880 Hz		
PSU A	575 Watts (475W @ 28 VDC)		
PSU A OUTPUTS	+5 VDC @ 40A, +3.3 VDC @ 22A, ±12 VDC @ 12A, (+5 VDC @ 40A, +3.3 VDC @ 22A, ±12 VDC @ 8A)		
PSU B	550 Watts (450W @ 28 VDC)		
PSU B OUTPUTS	+5 VDC @ 20A, +3.3 VDC @ 45A, ±12 VDC @ 12A, (+5 VDC @ 20A, +3.3 VDC @ 45A, ±12 VDC @ 8A)		
PSU C	575 Watts (475W @ 28 VDC)		
PSU C OUTPUTS	+5 VDC @ 20A, +3.3 VDC @ 22A, +12 VDC @ 21A, -12 VDC @ 12A, (+5 VDC @ 20A, +3.3 VDC @ 22A, +12 VDC @ 16A, -12 VDC @ 8A)		
BOARD FORMAT (MCS)	Slot-by-slot user configured card-cage allows intermixing conduction-cooled ANSI-VITA 48.2 & Air-cooled ANSI-VITA 48.1 boards		
INTERNAL FAN	4x 13 CFM (52 CFM). Fitted as standard in sealed models: CM-ATR-3U/S & CM-ATR-3U/HES		
FRONT PANEL AREA	125 mm x 140 mm		
CM FRONT PANEL I/O	6 Power Pins (13 Amp) & 382 I/O Pins (5 Amp)		
MTBF	25° GB 98,000 Hours, 65° AIC 32,000 Hours		
OPERATING TEMP	-40°C to +85°C Operating Temperature, -55°C to 100°C Storage Temperature		
MOUNTING TRAY	CM-TR-3U/HES	CM-TR-3U/S/FAC	

CM's 3U, CONDENSING ALL FEATURES INTO A COMPACT SINGLE PACKAGE!

CHASSIS SELECTION

Engineers and integrators will appreciate unparalleled COTS availability from CMs family of 3U & 6U ATR enclosures. With six different cooling techniques available, our customers are able to select their optimum chassis model dependent upon; **Backplane Bus Type, Number of Slots required** and **Total Payload Power Dissipation**.

Total system power will demand the most suitable cooling technique to ensure that reasonable operational temperature limits are maintained for the enclosed electronics.

FAC
FORCED AIR

S
SEALED

SEF
SEALED

HES
SEALED

SIXHEX
SEALED

SIXHEX-16HP
SEALED

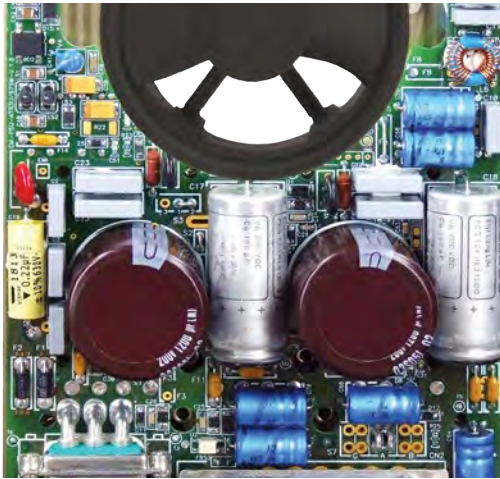
Cooling techniques supported by CM-ATR-3U Series

Cooling techniques supported by CM-ATR-6U Series

CM believes that every ATR application requires its own cooling solution in order to satisfy the most demanding life in service. Systems built must guarantee immediate flawless operation and demonstrate true uncompromising military performance.



PSU OPTIONS



		Vin Options		Backplane DC				Suggested BUS		
		28VDC	OTHER [†]	+5VDC	3.3VDC	+12VDC	-12VDC	VME64	cPCI	VPX
3U/S SEALED & 3U/HES SEALED & 3U/FAC AIR COOLED	A-475W	•		40A	22A	8A	8A	•		
	A-575W		•	40A	22A	12A	12A	•		
	B-450W	•		20A	45A	8A	8A	•	•	•
	B-550W		•	20A	45A	12A	12A	•	•	•
	C-475W	•		20A	22A	16A	8A			•
	C-575W		•	20A	22A	21A	12A			•

[†]All Inputs except 28 VDC; such as 48 VDC / 270 VDC / or Autorange 90-264 VAC @ 47-880Hz / 200 VAC-3Phase @ 47-880Hz

3U chassis PSUs support a wide variety of AC/DC input voltages and customer defined DC power output combinations up to 575 Watts. Our oversized power supply units are available in 3 different versions to suit the demand per DC Line of the most standard COTS open busses.

To comply with MIL-STD-461F, a high capacity integrated EMI/EMC input voltage filter is fitted as standard on all 3U models.

EXTENSIVE MILITARY FEATURES

- Contaminant-free enclosure (S + HES Models)
 - VPX, VME64 & cPCI ready (1" Pitch)
 - Accepts Conduction & Air-cooled 3U Modules
 - Flexible Top & Bottom I/O wiring
 - In-line EMI/EMC MIL-STD-461F Filter
 - Up to 250 Watts total Power Dissipation
 - Up to +85 Watts per slot
 - Integrated Temperature Supervisory Unit (TSU)
 - Dramatically increases payload MTBF by 4x
 - 20°C less than conventional 3U ATRs

- Maintenance free operation in service
 - Extensive set of front panel user indicators
 - Integrated Rear fans Finger Guards
 - Stand alone low weight solution
 - Internal card-cage airflow recirculation in all models
 - Independent Fan & Power Supply input voltage operation
 - Military Operating Temperature range (-40°C to +85°C)
 - Customizable to specific requirements
 - Low Profile Mounting Tray with quick release system
 - Designed & Manufactured with US MIL component parts

DESIGNED EXCLUSIVELY FOR SWAP SENSITIVE APPLICATIONS

MILITARY CERTIFICATES

MIL-STD-810G Temperature (Methods 501.5 & 502.5)

- -55 to +80 °C Operating.
- -55 to +100 °C Storage.

MIL-STD-810G Altitude (Method 500.5)

- Up to 65,000 ft operating.

MIL-STD-810G Shock (Method 516.6)

- Sawtooth pulse 40g 11ms.

MIL-STD-810G Acceleration (Method 513.6)

- Up to 12g, 3 axes.

MIL-STD-810G Vibration (Method 514.6)

- Category 12 for Jet Aircraft.
- 15 to 2000 Hz at 12g RMS.

MIL-E-5400T FOR AVIONICS CLASS 1



MIL-STD-810G Humidity & Salt Fog (Methods 507.5 & 509.5)

- Relative humidity 0-95% 10 cycles 240 h.
- Test 96 hours 5% NaCl salt (PH = 7).

MIL-STD-461F EMI & EMC (Electromagnetic compatibility)

- CE101, CE102, RE101, RE102, RE103, CS101, CS114, CS116, RS101, RS103.

MILITARY COMPONENTS INSIDE

MIL-STD-461D Power Supply Front-end Modules.

MIL-STD-704D & MIL-STD-1275A Power Supply.

MIL-R-6130 EMI/EMC Gasket.

MIL-STD-883 & MIL-PRF-38535 TTL Chips.

MIL-S-13949 Class V Printed Wiring Boards.

MIL-C-55302 Backplane Class I VME Connectors.

MIL-C-24308 Backplane Class I Cannon Type D.

MIL-C-24308 PSU & BP Class I Power Connectors.

MIL-C-38999 Circular Connector on Front Panel.

MIL-I-45208 & MIL-STD-810F DC/DC Converters.

MIL-STD-810C, MIL-B-23071 & MIL-B-28873 Fans.

AW6082-T651 Aeronautical Aluminum.

AISI-316 Screws, Inserts & Chassis Accessories.

MIL-I-45208 & MIL-STD-105 NAS-622 Hooks.

MIL-C-1291 Front Panel Bonding Point.

MIL-F-85731 Mounting Tray Clamps.

MIL-STD-1547B Corrosion Resistant Coating.

MIL-C-83286 External Surface Painting.

MILITARY DESIGN & MANUFACTURE

CM ATR chassis are designed using an advanced 3D CAD facility. This includes thermal modeling and environmental testing. All chassis materials and electronic parts are fully compliant to manned space flight requirements. All CM Computer products have a 2 year warranty and are delivered Tested and Certified by independent authorized Labs per **MIL-STD-461F & MIL-STD-810G** for immediate deployment in the US Navy & US Air Force military UAVs, Fighters and Helicopters.

UNRIVALED COTS AVAILABILITY

To complete your chassis P/N, use CMs innovative **Online Configurator** or contact us for a customized enclosure to meet your specific application requirements. CM not only offers the widest range of Military ATR chassis in the COTS market but also provides the most competitive delivery schedule because we manufacture our products entirely in our advanced in-house production facility.



CERTIFICATION

CE MARKED
ORCA REGISTERED
EXOSTAR REGISTERED
ISO 9001 CERTIFICATION
DGAM SUPPLIER N° 9015
NCAGE CODE REGISTERED
NATO SUPPLIER N° 7684B
D&B D-U-N-S REGISTERED
VITA REGISTERED MEMBER
VXWORKS APPROVED PARTNER
CENTRAL CONTRACTOR CERTIFICATION
US DEPARTMENT OF DEFENCE APPROVED



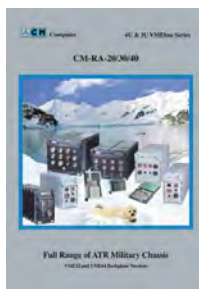
ATR SIXHEX-16HP



ATR SIXHEX



ATR SERIES



RA SERIES

* CM Military ATR Product Catalogs

