

# READY TO UPGRADE?

SMALL PACKAGE, HIGH PERFORMANCE 3U MILITARY ATR CHASSIS



CM Computers latest line of compact COTS ATR enclosures incorporate all proprietary technologies, advanced features and well established mechanical and electrical solutions developed during the past 20 years.

These military ATRs benefit from improved thermal dissipation and have been designed for cost effective 3U high power military systems and UAVs.

Three 5-slot 3U chassis cooling techniques are available to suit all applications. All models (S/HES/FAC) integrate the same enhanced PSU and Backplane electronics.

## True COTS capabilities

- 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-461E Filter
- Operating Temperature -40°C to +85°C
- Up to +85 Watts per slot
- Integrated Temperature Supervisory Unit
- 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
- Independent Fan & Power Supply input voltage
- Customizable to specific requirements
- Low Profile Mounting Tray with quick release

	Vin Options		Backplane DC				Suggested BUS		
	28VDC	OTHER†	+5VDC	3.3VDC	+12VDC	-12VDC	VME64	cPCI	VPX
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			•

†48 VDC / 270 VDC / Autorange 90-264 VAC @ 47-880Hz / 200 VAC-3Ph @ 47-880Hz

## The leading ATR chassis manufacturer in Europe & the USA

All our chassis products are delivered **Tested and Certified** by independent authorized Labs per **MIL-STD-461E & MIL-STD-810G** for immediate deployment in US Navy & US Air Force military UAVs, Fighters & Helicopters. Contact [info@cmcomputer.com](mailto:info@cmcomputer.com) to request our new Chassis Catalog.

4 HEAT EXCHANGERS

3U

UP TO 575 WATTS



CM-ATR-3U/FAC

CM-ATR-3U/HES

www.cmcomputer.com







# Going that extra mile?

— HYBRID COOLED & ENGINEERED FOR IMMEDIATE DEPLOYMENT

For over 25 years, prime defense contractors have selected CM Computer to be their ATR Chassis or VMEbus supplier for more than two hundred first class industrial and military system programs worldwide.

Our VPX, VME and cPCI ATR Hybrid Chassis fitted with Six Heat Exchangers plus 16 Heat Pipes are expressly designed for the most demanding customers who appreciate uncompromising quality and reliability.

CM balances proven COTS hardware design with the advantages of cutting edge ATR cooling technologies to supply performance military systems.



- 1 CM-ATR-25/SIXHEX-16HP: 1/2 ATR, 5 SLOT 6U, 575W PSU, 9 kg
- 2 CM-ATR-35/SIXHEX-16HP: 3/4 ATR, 7 SLOT 6U, 825W PSU, 13 kg
- 3 CM-ATR-45/SIXHEX-16HP: 1 ATR, 12 SLOT 6U, 1550W PSU, 18 kg

## Expand Your Horizons

- Contaminant-free enclosure
- Available in 1/2, 3/4 & 1 ATR size
- VPX, VME64 & cPCI ready
- Accepts Conduction & Air-cooled 6Us
- Flexible Top & Bottom I/O wiring
- Six Internal Heat Exchangers
- 16 Integrated Heat Pipes
- Up to 1.5 kW total Power Dissipation
- Up to 150 Watts per Slot
- Integrated Temperature Control Unit
- Dramatically increases payload MTBF
- 2 User defined PSU 100W DC outputs
- 25°C less than heat exchanger ATRs
- 50°C less than conventional sealed ATRs
- In-line EMI/EMC MIL-STD 461E Filter
- Stand alone low weight solution
- Customizable to specific requirements
- Mounting Tray with quick release system

## The leading military ATR Chassis & VME I/O manufacturer in Europe & the USA

All our chassis products are delivered Tested and Certified by independent authorized Labs per **MIL-STD-461E** & **MIL-STD-810F** for immediate deployment in US Navy and US Air Force military UAVs, Fighters and Helicopters.

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**CM Computer**  
True Military COTS Products



# CM's true military certified PSUs

INTEGRATED FOR TRUE COTS ATR PERFORMANCE

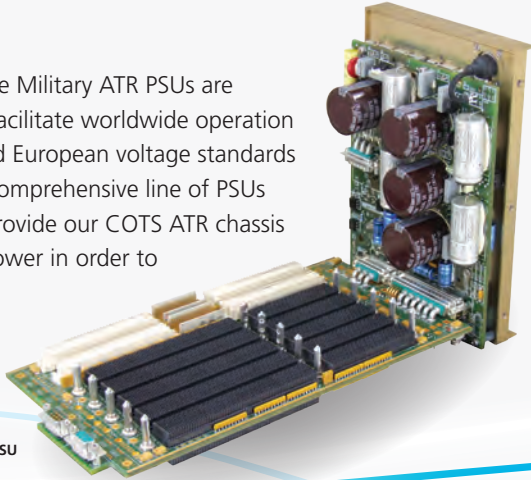


CM-ATR-35/SIXHEX-16HP: 3/4 ATR, 825W PSU

**"...powering customers to succeed"**

CM's extensive experience in the design and manufacture of military ATR enclosures has proven that PSUs are a key factor in military system success. Our latest military ATR chassis are fitted with PSUs that feature exceptionally low EMI/EMC electromagnetic noise, high reliability and extreme thermal tolerance.

Our wide range of high performance Military ATR PSUs are extraordinarily versatile in order to facilitate worldwide operation by accepting all North American and European voltage standards (DC & AC single & 3-Phase). CM's comprehensive line of PSUs have been designed exclusively to provide our COTS ATR chassis with uncompromising reserves of power in order to support the most demanding payload requirements.



CM-ATR-35/SIXHEX-16HP HYBRID BACKPLANE & PSU

	PSU P/N vs total DC Output (Watts)	Vin Options		Backplane DC				Suggested BUS		
		28VDC	OTHER †	+5VDC	+3.3VDC	+12VDC	-12VDC	VME64	cPCI	VPX
1/2 ATR PSU Models	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			•
3/4 ATR PSU Models	A-675W	•		80A	22A	8A	8A	•		
	A-775W		•	80A	22A	12A	12A	•		
	B-565W	•		20A	80A	8A	8A		•	
	B-665W		•	20A	80A	12A	12A		•	
	C-675W	•		20A	22A	33A	8A			•
	C-825W		•	20A	22A	41A	12A			•
	D-550W	•		40A	45A	8A	8A	•	•	
	D-650W		•	40A	45A	12A	12A	•	•	
	E-550W	•		20A	45A	16A	8A		•	•
	E-650W		•	20A	45A	21A	12A		•	•
1 ATR PSU Models	F-575W	•		40A	22A	16A	8A		•	•
	F-675W		•	40A	22A	21A	12A		•	•
	A-950W	•		80A	45A	16A	16A	•	•	
	A-1050W		•	80A	45A	21A	21A	•	•	
	B-1065W	•		80A	80A	16A	16A	•	•	
	B-1165W		•	80A	80A	21A	21A	•	•	
	C-1225W	•		80A	160A	16A	16A	•	•	
	C-1425W		•	80A	160A	21A	21A	•	•	
	D-1350W	•		160A	80A	16A	16A	•	•	
	D-1550W		•	160A	80A	21A	21A	•	•	

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

## SixHex-16HP Chassis COTS Capabilities

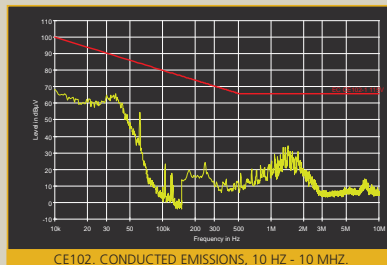
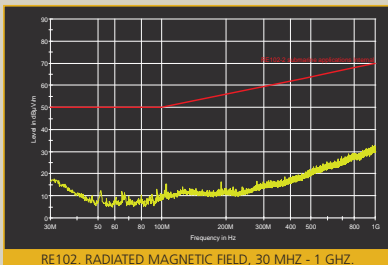
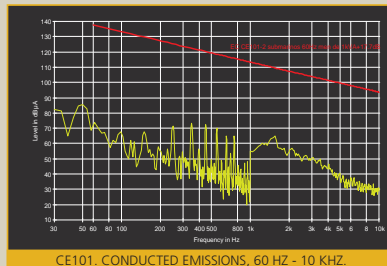
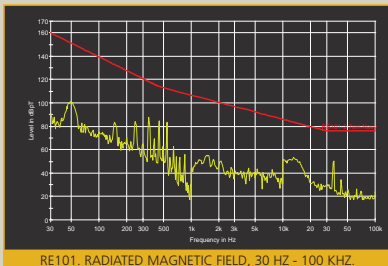
- Contaminant-free enclosure
- Available in 1/2, 3/4 & 1 ATR size
- VPX, VME64 & cPCI ready
- Accepts Conduction & Air-cooled 6Us
- Flexible Top & Bottom I/O wiring
- Six internal Heat Exchangers
- 16 integrated Heat Pipes
- Up to 1.5 kW total Power Dissipation
- Up to 150 Watts per slot
- Integrated Temperature Control Unit
- Dramatically increases payload MTBF
- 2 User defined PSU 100W DC outputs
- 25°C less than heat exchanger ATRs
- 50°C less than conventional ATRs
- In-line EMI/EMC MIL-STD 461E Filter
- Stand alone low weight solution
- Customizable to specific requirements
- Mounting Tray with quick release system



CM-ATR-25/SIXHEX-16HP: 1/2 ATR, 5 SLOT, 575W PSU, 9 kg

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CM ATR Chassis MIL-STD-461E Compliance



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Contact us at [info@cmcomputer.com](mailto:info@cmcomputer.com) to request our latest Hybrid Cooled ATR Chassis Catalog.



**CM Computer**  
True Military COTS Products



# Ready to upgrade?

CM Computers Six Heat Exchanger + 16 Heat Pipe ATR Hybrid Chassis are expressly designed for the most demanding customers who appreciate uncompromising quality, capacity and reliability.

Our new VPX, VME & cPCI Hybrid ATRs further reduces payload operating temperatures, improves system thermal performance and increases MTBF.

This evolutionary combination of heat transfer technologies integrated within a compact size series of enclosures re-enforces CM Computer as the leading military ATR COTS supplier worldwide.

- MILITARY DESIGNED AND MANUFACTURED
- HYBRID COOLED FOR INCREASED DISSIPATION
- ENGINEERED FOR IMMEDIATE DEPLOYMENT



## True COTS capabilities

- Contaminant-free enclosure
- Available in 1/2, 3/4 & 1 ATR size
- VPX, VME64 & cPCI ready
- Accepts Conduction & Air-cooled 6Us
- Flexible Top & Bottom I/O wiring
- Six internal Heat Exchangers
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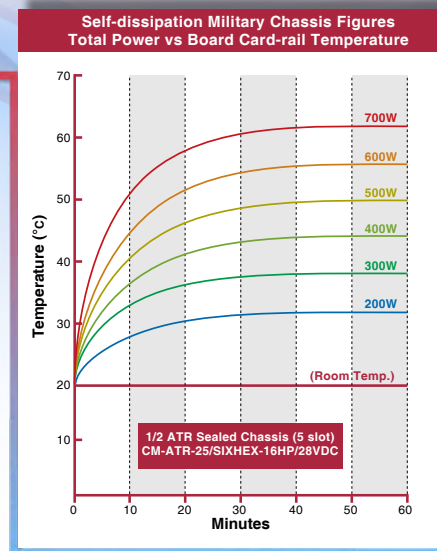


## VPX, VME & cPCI True Military ATR Enclosures 16HP - Embedded Heat Pipe transfer system

### The perfect Sealed COTS solution

We have incorporated 16 Heat Pipes within our latest Six Heat Exchanger chassis series in order to improve thermal performance a step further. The new SixHex-16HP ATR range will increase your system MTBF by 40% when compared to our outstanding SixHex series as a result of the additional reduction in payload operating temperatures.

This achievement surpassed our design expectations. Customers will appreciate the superb quality and performance delivered in such compact enclosures. Today, even our smallest 9 kg 1/2 ATR chassis is capable of handling up to 700 Watts. This COTS industry record establishes an unbeatable sealed platform for the most demanding Military applications.



CM-ATR-25/SIXHEX-16HP : 1/2 ATR, 5 Slot 6U, 575W PSU, 9Kg

### Product Highlights

- Contaminant-free enclosure
- Available in 1/2, 3/4 & 1 ATR size
- VPX, VME64 & cPCI ready
- Accepts Conduction & Air-cooled 6Us
- Flexible Top & Bottom I/O wiring
- Six internal Heat Exchangers
- 16 integrated Heat Pipes
- Up to 1.8 KW total Power Dissipation
- Up to 150 W per slot
- Integrated Temperature Control Unit
- Dramatically increases payload MTBF
- 2 User defined PSU DC outputs
- 25°C less than heat exchanger ATRs
- 50°C less than conventional ATRs
- In-line EMI/EMC MIL-STD 461E Filter
- Stand alone low weight solution
- Customizable to specific requirements
- Mounting Tray with quick release system

CM-ATR-25 SixHex-16HP Power Supply Options	Vin Options		Backplane DC				Suggested BUS			Max Input Power Excluding Rear Fans
	28VDC	OTHER <sup>†</sup>	+5VDC	+3.3VDC	+12VDC	-12VDC	VME64	cPCI	VPX	
A-475W	✓		40A	22A	8A	8A	✓			700W
A-575W		✓	40A	22A	12A	12A	✓			850W
B-450W	✓		20A	45A	8A	8A		✓		700W
B-550W		✓	20A	45A	12A	12A		✓		800W
C-475W	✓		20A	22A	16A	8A			✓	700W
C-575W		✓	20A	22A	21A	12A			✓	850W

<sup>†</sup> All Inputs except 28VDC : 48VDC / 270VDC / Autorange 90-264VAC @ 47-880Hz / 200VAC-3Phase @ 47-880Hz

It has been demonstrated in the field that military ATR enclosures are crucial to your end system reliability and performance. CM Computers is proud to develop superior products that guarantee your payload electronics are matched with excellence.



All our chassis products are delivered Tested and Certified by independent authorized Labs per MIL-STD-461E & MIL-STD-810F for immediate deployment in US Navy and US Air Force military UAVs, Fighters and Helicopters.

CM Computer SixHex: Pure Power, Pure Dissipation, Pure Thermodynamics  
Visit [www.cmcomputer.com](http://www.cmcomputer.com) or contact us at [info@cmcomputer.com](mailto:info@cmcomputer.com) to request our latest Chassis Catalog.





# Expand your military system horizons with CM Computers ATR



CM-ATR-25/35/45/S/SEF/HES/FAC

## VPX, VME & cPCI True Military ATR Enclosures

Up to 15 ATR COTS models available  
 PSUs from 300-1500 Watts  
 1/2, 3/4 & 1 ATR size



CM-ATR-35/SIXHEX  
 3/4 ATR, 7 Slot, 800W PSU

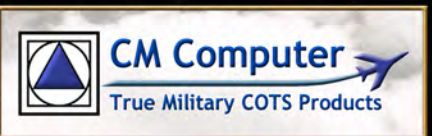


CM-ATR-35/SIXHEX

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**CM Computer SixHex: Pure Power, Pure Dissipation, Pure Thermodynamics**

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## VPX, VME & cPCI True Military ATR Enclosures

### Fly first class with CM Computers

We are conscious that not all military integrators will require a top class ATR chassis like our new SixHex series, but we can ensure that our fortunate customers will enjoy the experience.

It has been demonstrated in the field that ATR enclosures are crucial to your end system reliability and performance. Therefore we have developed a superior product to guarantee that your payload electronics are matched with excellence.



CM-ATR-35/SIXHEX  
3/4 ATR, 7 Slot, 800W PSU



### Product Highlights

- Contaminant-free enclosure
- Available in 1/2, 3/4 & 1 ATR size
- VPX, VME & cPCI ready
- Accepts Conduction & Air-cooled 6Us
- Flexible top & bottom I/O wiring
- Integrated Temperature Control Unit
- Six internal Heat Exchangers
- Up to 1.8 KW total Power Dissipation
- Up to 150 W per slot
- Dramatically increases payload MTBF
- 2 User defined PSU DC outputs
- 20°C less than heat exchanger ATRs
- 45°C less than conventional ATRs
- Stand alone low weight solution
- Customizable to specific requirements
- Mounting Tray with quick release system

### The perfect Sealed COTS solution for advanced military electronic systems

Breaking all limitations previously understood by chassis designers, our fourth generation Six Heat Exchanger ATR series meets the demand for high power solutions that require exceptional thermal performance and truly flexible system integration.

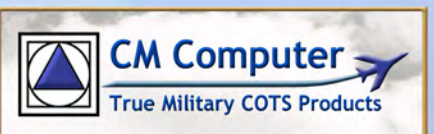
The SixHex is manufactured incorporating US military standard components throughout.



All our chassis products are delivered Tested and Certified by independent authorized Labs per MIL-STD-461E & MIL-STD-810F for immediate deployment in US Navy & US Air Force military Fighters and Helicopters.

**CM Computer SixHex: Pure Power, Pure Dissipation, Pure Thermodynamics**

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"Keeping cool under pressure"



## Enjoy the Art of Dissipation Inside CM Computers latest SixHex

...cooling your valuable boards to a temperature they deserve.



Sealed 1 ATR, 12 slot, 1500 Watts PSU, +5V (+3.3V) 160 Amps, 17 Kg



SIXHEX™ from CM Computers pushes the limits of conduction cooling to meet the demand for low weight, stand alone advanced COTS military systems.

Expressly designed to compete against unpractical liquid cooled chassis alternatives, up to 150+ Watts per slot can be cooled to 85°C at card edge whilst providing further significant advantages.

The SixHex is available in a single pack ½, ¾ and 1 ATR solution with 5, 7 & 12 slot sizes, also incorporating all standard features and innovations established in previous CM Series (S, SEF, HES & FAC).

### Breaking all limitations previously understood by ATR designers

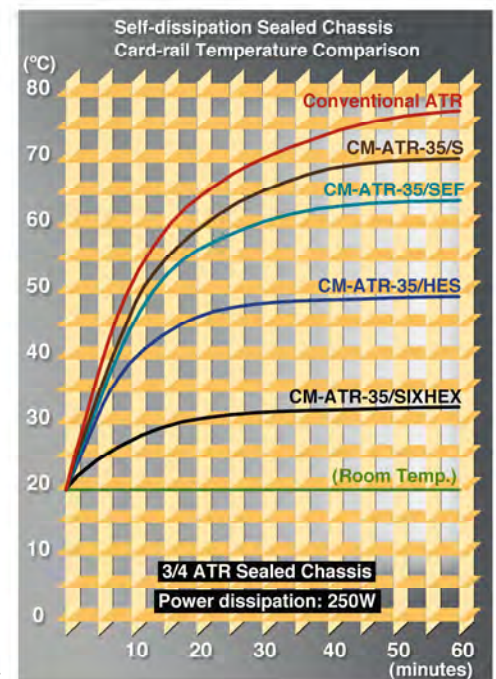
Our fourth generation SixHex is perfectly suited to forthcoming true military systems that require lighting thermal performance and uncompromising reliability.

This series features an optional Microcontroller Supervisory Unit that monitors all relevant electrical & environmental chassis operational parameters.



### Product Highlights

- Contaminant-free enclosure
- VPX, VME & cPCI ready
- Accepts Conduction & Air-cooled 6Us
- Flexible top & bottom I/O wiring
- Integrated Temperature Control Unit
- Six internal Heat Exchangers
- Up to 3.6 m<sup>2</sup> thermo-active surface
- Up to 1.8 KW total Power Dissipation
- Up to 150 W per slot
- Dramatically increases payload MTBF
- 2 User defined PSU DC outputs
- 20°C less than heat exchanger ATRs
- 45°C less than conventional ATRs
- Customizable to specific requirements



Sealed ¾ ATR, 7 slot, 800 W PSU, +5V (+3.3V) 80 A, 14 Kg

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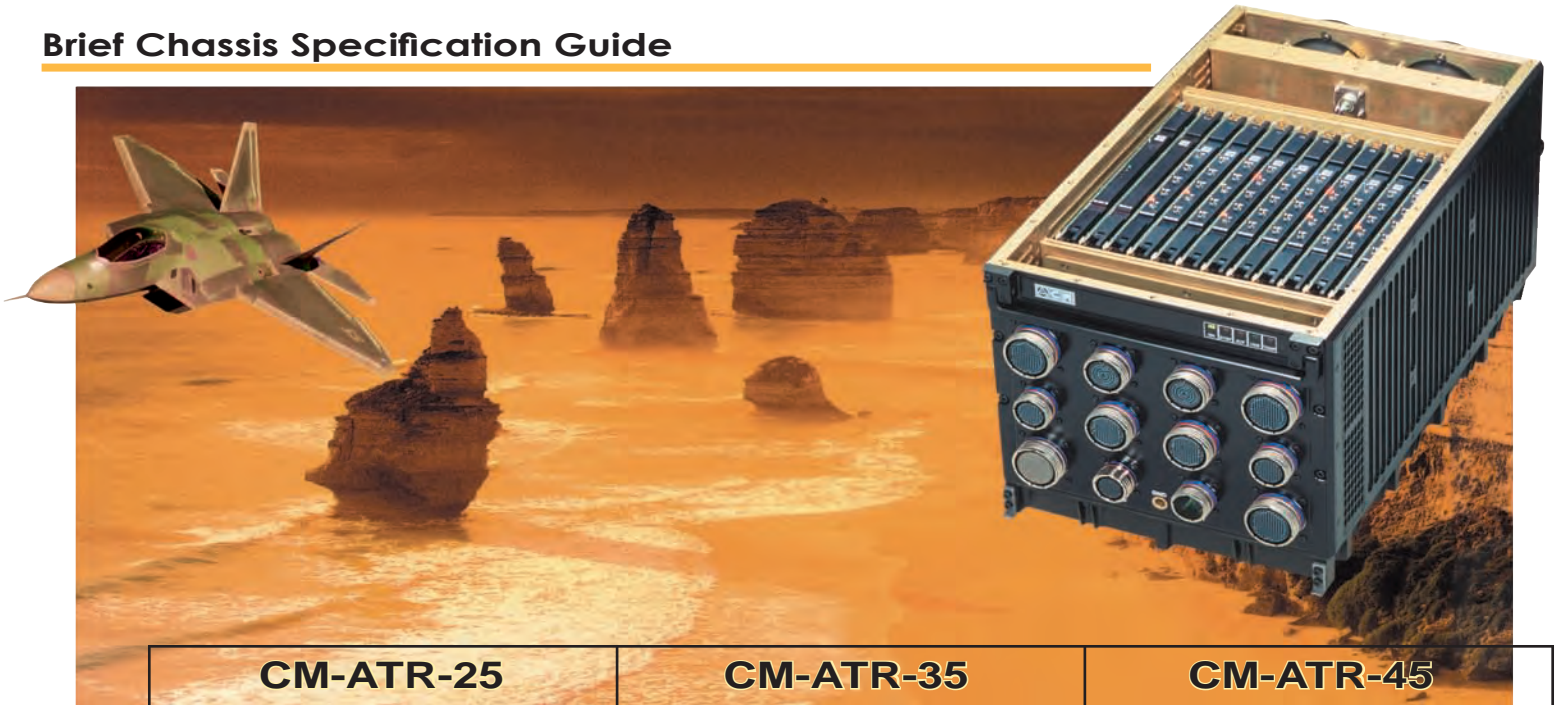


## Discover Chassis COTS Standards with CM COMPUTER

and enter into another world with our new **CM-ATR-25/35/45 Series**. Up to 15 enclosure models offering outstanding Performance, oversized Power Capacity, optimum Heat Management and a wide range of Accessories & custom Options.

Decidedly well suited for critical Defense & Aerospace systems requiring premium quality that can be provided only by leading-edge technology.

### Brief Chassis Specification Guide



	CM-ATR-25					CM-ATR-35					CM-ATR-45				
(*)	FAC	S	SEF	HES	SIXHEX	FAC	S	SEF	HES	SIXHEX	FAC	S	SEF	HES	SIXHEX
Size / Slots	½ ATR - Long / 5 Slot 6U VME64x or cPCI					¾ ATR - Long / 7 Slot 6U VME64x or cPCI					1 ATR - Long / 12 Slot 6U VME64x or cPCI				
Power Supply	400 Watts				575 Watts	500 Watts				775 Watts	1050 Watts				1450 Watts
+5 / +3.3 VDC	20 Amp / 23 Amp				40 A / 23 A	40 Amp / 23 Amp				80 A / 23 A	80 Amp / 45 Amp				160 A / 45 A
±12 VDC	12 Amp each					12 Amp each					20 Amp each				
Chassis Vin	All PSU models accept: 28 VDC; 48 VDC; 270 VDC; Autorange 90-264 VAC @ 47-880 Hz and 200 VAC 3-Phase @ 47-880 Hz														
Board Format	Slot-by-slot user configured card-cage allows intermixing conduction-cooled IEEE-1101.2/ANSI-VITA 30.1 and air-cooled IEC-297/IEEE-1101.1 boards														

(\*) Cooling Options: FAC - Flowthrough Air Cooled; S - Sealed; SEF - Sealed, Extended Fins; HES - Sealed, Heat Exchanger Sidewalls; SIXHES - Sealed, Six Heat Exchangers



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# Going that extra mile?

— HYBRID COOLED & ENGINEERED FOR IMMEDIATE DEPLOYMENT

Our VPX, VMEbus & cPCI Six Heat Exchanger + 16 Heat Pipe ATR Hybrid Chassis are expressly designed for the most demanding customers who appreciate uncompromising quality and reliability. CM Computer balances proven COTS hardware design with the advantages of ATR cutting-edge cooling technologies to supply performance military systems.



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TÜV Rheinland  
**CERT**  
ISO 9001



**CM Computer**  
True Military COTS Products

www.cmcomputer.com





## The leading military ATR Chassis & VMEbus I/O manufacturer in Europe and the USA



For over 24 years, defence prime contractors have selected CM Computer to be their ATR Chassis or VMEbus supplier for more than two hundred first class industrial and military system programs worldwide.

Our VPX, VME & cPCI ATR Chassis and electronic modules are expressly designed for the most demanding customers who appreciate uncompromising quality and reliability. CM balances proven old-school military hardware design with the advantages of COTS open architectures to supply performance military systems.



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True Military COTS Products

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