

ATR (Air Transport Rack)



PRODUCT OVERVIEW

Continuing to innovate in the manufacturing of ruggedized, modular, COTS systems platforms, Elma's full line of convection and conduction cooled ATR (Air Transport Rack) enclosures offer a standardized, cost effective solution for VME, VME64x, VXS, MicroTCA, cPCI and cPCI Express based applications. Available in 1/2, 3/4, 1 and 1 1/2 ATR tall long or tall short formats per ARINC 404A, ARINC 600 and IEEE 1101.10 specifications, the modular design concept allows for a wide range of customization options without the cost and lead time penalties associated with custom designs.

The all-aluminum ATRs are made from punched and formed sheet metal and milled plates. A removable front panel allows I/O customization to exact application requirements and increased configurability. The ATR enclosures use electrostatic dust filters, honeycomb EMI filters and a narrow screw spacing to seal off every external seam to ensure compliance to MIL-STD-461D. The rugged designs meet the requirement for shock, vibration and structural integrity per MIL-STD-810F, MIL-STD-167 and MIL-STD-901D.

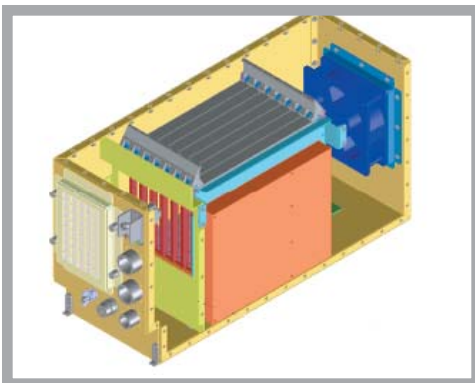
In addition to the full range of available case sizes, standard options include: 5-15 slot 6U x 160mm card cages, 150-750 watt power supplies, 28VDC or 90-230VAC (440 Hz) input, up to 470 CFM cooling systems and configurable I/O. All Elma Electronic Inc, system platforms come fully assembled and wired offering a "turnkey" packaging solution.

Elma's ATR products incorporates Mil-grade components like Mil-38999 connector, integrated sensors, line filters, on/off and reset switches, LEDs, fuses, breakers, etc. Fan options include the use of full Mil-grade high altitude fan tray can operate under extremely harsh temperature conditions. Depending on applications specific equipments either commercial, industrial or Mil-grade power supplies can be used.

MIL-STD

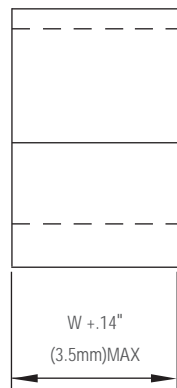
- MIL-STD-5400: General standard for Aerospace Electronic Equipment
- MIL-STD-810F: Environmental Test Methods and Engineering Guidelines
- MIL-STD-461E: Requirements for the control of EMI Emissions and Susceptibility
- MIL-STD-704E: Aircraft Electric Power Characteristics
- MIL-STD-1275A: Characteristics of 28 Volt DC Electrical Systems in Military Vehicles

APPLICATION EXAMPLES

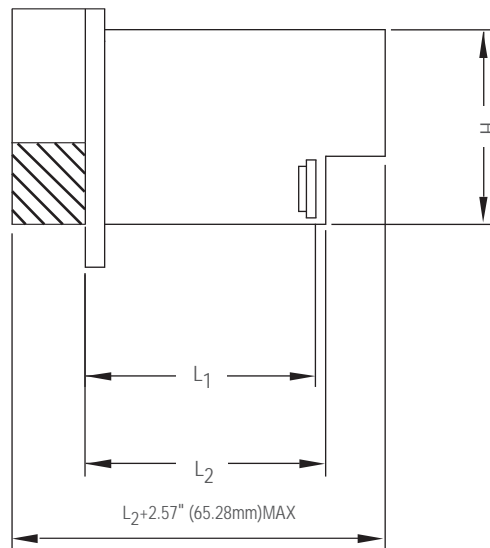


ATR ORDER NUMBER	ATRATL05...	ATRBTS07...	ATRBTL07...	ATRCTL12...	ATRDTL15...
Size	1/2 ATR Tall, Long	3/4 ATR Tall, Short	3/4 ATR Tall, Long	1 ATR Tall, Long	1 1/2 ATR Tall, Long
Slots	4	7	11	12	15
Backplane	VME,VME64x,cPCI	VME,VME64x,cPCI	VME,VME64x,cPCI	VME,VME64x,cPCI	VME,VME64x,cPCI
Width	123.95mm (4.9")	190.5mm (7.5")	190.5mm (7.5")	257.05mm(10.12")	390.65mm (15.38)
Height	269.88mm (10.625")	269.88mm (10.625")	269.88mm (10.625")	269.88mm (10.625")	269.88mm (10.625")
Depth	498mm (19.6")	320.5mm (12.62")	498mm (19.6")	498mm (19.6")	498mm (19.6")
Power Supply	250 watts 5V@30A 3.3V@30A +12V@4A -12V@4A	350 watts 5V@30A 3.3V@30A +12V@8A -12V@8A	350 watts 5V@30A 3.3V@30A +12V@8A -12V@8A	500 watts 5V@60A 3.3V@30A +12V@8A -12V@8A	700 watts 5V@80A 3.3V@60A +12V@8A -12V@8A
Weight (without boards)	17lbs.	22 lbs.	25lbs.	33 lbs.	45 lbs.

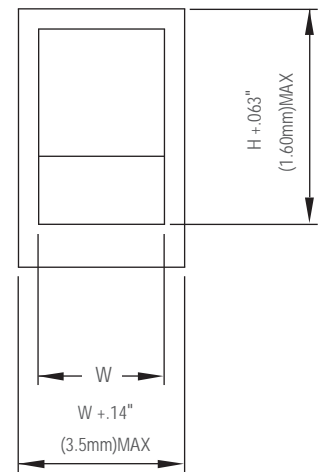
STANDARD ATR CASE DIMENSIONS



Front View



Side View



Top View

ATR Size	Approx. Volume		Width(W)		Length(L1)		Length (L2)		Height (H)	
	in ³	liter ³	±.03in	±0.76mm	±.04in	±1mm	in	mm	in	mm
1/2 Short	470	7.70	4.88	123.95	12.52	318.0	12.62	320.5	10.625	269.88
1/2 Long	725	11.88	4.88	123.95	19.52	495.8	19.62	498.3	10.625	269.88
3/4 Short	720	11.80	7.50	190.50	12.52	318.0	12.62	320.5	10.625	269.88
3/4 Long	1120	18.36	7.50	190.50	19.52	495.8	19.52	498.3	10.625	269.88
1 Short	975	15.98	10.12	257.05	12.52	318.0	12.62	320.5	10.625	269.88
1 Long	1510	24.75	10.12	257.05	19.52	495.8	19.62	498.3	10.625	269.88
1 1/2 Long	2295	37.62	15.38	390.65	19.52	495.8	19.62	498.3	10.625	269.88

Notes: Per ARINC characteristic 561 INS, the standard dimension 'H' = 7.62" may be increased to a maximum 'H' dimension of 10.625" (269.88mm) when necessary for equipment reasons.

POWER SUPPLY FEATURES

- Low Noise FM Control
- Military Specification Compliance
(MIL-STD-461C: EMI/RFI, MIL-STD704A, 1275A: Transients & Spikes, MIL-I-45208: Quality System)

Parameter	Min.	Typ.	Max.	Units	Notes
Input Characteristics					
28 VDC Input Modules:					
Steady State Input	18	28	50	VDC	20ms,50W per MIL-STD704A 100ms,15mJ per MIL-STD1275A 60ms,0.5Wper MIL-STD1275A 100ms Automatic Recovery Steady state IIN 10ms
Input Spike Limit	-600		+600	VDC	
Input Surge Limit:	-250		+250	VDC	
Overvoltage Shutdown		50	100	VDC	
Inrush Current		110	125	%IIN	
EMI/RFI Characteristics; (MIL-STD-461D, Class A1b)					
Input Power Leads:					
Conducted Emissions	CE03				MIL-STD-461D
Conducted Susceptibility	CS02				MIL-STD-461D
Radiated Susceptibility	RS03				
Output Characteristics					
Load/Line Regulation		0.2%	0.5%	VNOM	LL to HL, NL to 10% LL to HL, 10% to FL
		0.05%	0.2%	VNOM	
Thermal Characteristics					
Efficiency		77	81	%	

FAN FEATURES

- High performance axial fan
- Feathered edge for lower noise
- High reliability ball bearings
- Range: 80 - 350 CFM
- Operating temperature: -10°C to +70°C
- Per MIL-STD-461D meets EMI standards per FCC Part 15, Subpart J of Docket 20780, Class A & B radiated and conducted emissions, meets EMI standards per VDE Spec. 0871/6.78 for cat. A&B requirements
- Isolated tachometer output-square wave output equal to two pulses per revolution

ENVIRONMENTAL SPECIFICATIONS

PARAMETER	I GRADE	M GRADE	APPLICABLE SPECIFICATION
Temp, Operating	-10° to +55°C	-55 ° to +85°C	MIL-STD-810F (Methods 501.3 & 502.3)
Temp, non-Operating	-30° to +85°C	-55 ° to +85°C	MIL-STD-810F (Methods 501.3 & 502.3)
Shock	15 g 11ms	25g 11ms	MIL-STD-810F (Method 516.4)
Vibration	15 to 2,000 Hz at .1g2/Hz (RMS – 12G)	15 to 2,000 Hz at .1g2/Hz (RMS – 12G)	MIL-STD-810F (Method 514.4)
Altitude, Operating	15,000 ft	55,000 ft	MIL-STD-810F (Method 500.3)
Humidity	0-95% non-condensing	0-95% non-condensing	MIL-STD-810F (Method 507.3)
Salt fog	Limited	Conformal Coating 5% for 48 hours	MIL-STD-810F (Method 509.3)
Wiring	Limited Toxicity	Limited Toxicity	MIL-C-24643
EMC	MIL-STD-461D	Tempest	MIL-STD-461D Tempest

ATR Products



3/4 ATR PLATFORM, TALL/LONG

- Backplane in VME/64x, cPCI, VXS, VPX or MicroTCA up to 7 slots
- Vertical card mounting (top loading) 6U x 160mm
- Up to 400 watts of power with 28VDC or optional AC input
- Bottom patch panel offers access to P2 section of the backplane
- Integral cooling with front-to-rear airflow
- Mil-grade high-performance Ametek Rotron fan, capable of providing over 15 CFM per slot at altitudes over 35000 feet and operating temperature of 55°C to 85°C
- Integral cooling with front-to-rear airflow
- **Order Number: ATR7507V645XP28VDC**



1 ATR PLATFORM, TALL/LONG

- Vertical card mounting (top loading) 6U x 160mm VME64x compliant
- Backplane in VME/64x, cPCI, VPX, VXS, or MicroTCA, up to 8 slots
- Standard 28 VDC Power Supply, 400 W
- Measures 10.12" w x 10.62" h x 19.6" d
- P2 and P0 backplane backside connector pins required
- Minimum 2.0 inches required below the backplane (2.5 inches preferred)
- Bottom patch panel offers access to P2 section of the backplane
- Integral cooling with front-to-rear airflow
- Indicator/I-O front panel
- DC input connector, power on/off toggle switch, elapsed time meter and voltage indicators with voltage monitor
- Front-mounted carrying handles and mounting hooks
- Fan fail indicator and reset switch (optional)
- **Order Number: ATRCTL100PNXVTNZ46U**



1 1/2 ATR PLATFORM, TALL/LONG

- Backplane in VME/64x, cPCI, VPX, VXS or MicroTCA in sizes up to 15 slots
- Vertical card mounting (top loading) 6U x 160mm
- Power Supply: 120 VAC or 28 VDC
- Measures 15.38" w x 12" h x 19.6" d
- P2 and P0 backplane backside connector pins
- Bottom patch panel offers access to P2 section of the backplane
- Integral cooling with front-to-rear airflow
- AC input connector, power on/off toggle switch, elapsed time meter and voltage indicators with voltage monitor, status indicator I-O front panel
- Front-mounted carrying handles and mounting hooks
- Fan fail indicator and reset switch (optional)