

Advanced Temperature Test (ATT) Systems

L40/M40 Thermal System: -55°C to +200°C

This guide contains information to help prepare your facility for the arrival of your ATT Test Systems L40/M40 thermal system.



NOTE

Operation at negative temperatures requires a shielded system.

Thermal System Requirements

Clean Dry Air (CDA)



WARNING


Operating the system without sufficient air pressure or flow can cause significant component damage. The control unit and the chiller must be connected to common ground.

FormFactor does not endorse or recommend using nitrogen instead of CDA for thermal system operation with any FormFactor system due to the risk of oxygen depletion in the working environment. If your testing configuration requires the use of nitrogen instead of CDA for MicroChamber purge, time in Quick Purge mode should be controlled. Discuss your setup with your safety and facilities departments to ensure that the oxygen flow in your working environment is adequate to dissipate any nitrogen build up. The use of oxygen sensor alarms is also recommended. For MicroChamber purge requirements, refer to your probe station Facility Planning Guide.

Cooling medium	<ul style="list-style-type: none"> ISO 8573.1 Class 1.1.1 (-70°C dew point, oil less than 0.01 mg/m³)
Temperature	<ul style="list-style-type: none"> Minimum: 5°C Maximum: 30°C
Flow rate	<ul style="list-style-type: none"> Cooling from 200 to 52°C: 260 l/min (10 CFM) required, at SATP* supplied at 6-8 bar (87 - 116 psi) gage Cooling from 52°C to -55°C: 20 l/min (0.7 CFM) required, at SATP* supplied at 6-8 bar (87 - 116 psi) gage Holding ? 90°C: 100 l/min (3.5 CFM) required, at SATP* supplied at 6-8 bar (87 - 116 psi) gage Holding 80°C to 90°C: 130 l/min (4.6 CFM) required, at SATP* supplied at 6-8 bar (87 - 116 psi) gage Holding 51°C to 80°C: 50 l/min (1.8 CFM) required, at SATP* supplied at 6-8 bar (87 - 116 psi) gage Holding < 51°C: 20 l/min (0.7 CFM) required, at SATP* supplied at 6-8 bar (87 - 116 psi) gage 10 mm OD push-in tube connection

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Power	 NOTE <i>Controller and chiller connect to the same power line with a shared ground.</i>	
	Main controller	<ul style="list-style-type: none"> • Single Phase: 200-230 VAC 50/60 Hz • 1500 VA • Source: <ul style="list-style-type: none"> – North American: NEMA 5-20 for 100-127 VAC or NEMA L6-15 for 208-240 VAC – Europe: CEE VII (Schuko) – Other: consult factory
	Chiller unit	<ul style="list-style-type: none"> • Single Phase: 208 VAC 2 ~ 60 Hz, 20 A or 230 VAC 1 ~ 50 Hz, 16 A • Source: <ul style="list-style-type: none"> – North American: NEMA L6-30 for 208-240 VAC – Europe: CEE VII (Schuko) – Other: consult factory • Mains voltage (in accordance with EN60034-1): <ul style="list-style-type: none"> – Voltage $\pm 5\%$ with a simultaneous frequency tolerance of $\pm 2\%$ (for example, -5% voltage and +2% frequency is not allowed, -5% voltage and -2% frequency is allowed)
Coolant	<ul style="list-style-type: none"> • Circulating chuck cooling fluid HFE7200 • Normal cooling liquid consumption = 50 to 100 ml/month. 	
Environmental Conditions	Site requirements	<ul style="list-style-type: none"> • For indoor use only • Installation site ?2000 m altitude • Installed on a level, even with surface • Position the thermal system on the left side of the station due to the thermal hose and cable connection length. Longer thermal hose and cables are available, but may affect performance. • The unit should be located so as not to restrict access to the mains power switch.
	Temperature	<ul style="list-style-type: none"> • Ambient temperature: +18°C to +28°C
	Relative humidity	<ul style="list-style-type: none"> • Relative humidity: 20% to 60%
	Seismic restraints	To use the seismic restraints, 4 anchor bolts must be embedded in the floor at the customer site for seismic restraint use. See your ATT user documentation for details on placement.
Communications	RS-232 or USB	
Dimensions (WxDxH)	Controller	<ul style="list-style-type: none"> • See Controller Dimensions on page 4.
	Chiller	<ul style="list-style-type: none"> • See Chiller Dimensions on page 3.
Weight	Controller	<ul style="list-style-type: none"> • 11 kg (24.3 pounds)
	Chiller	<ul style="list-style-type: none"> • 90 kg (198 pounds)
	Two people are required to roll the chiller from the crate.	

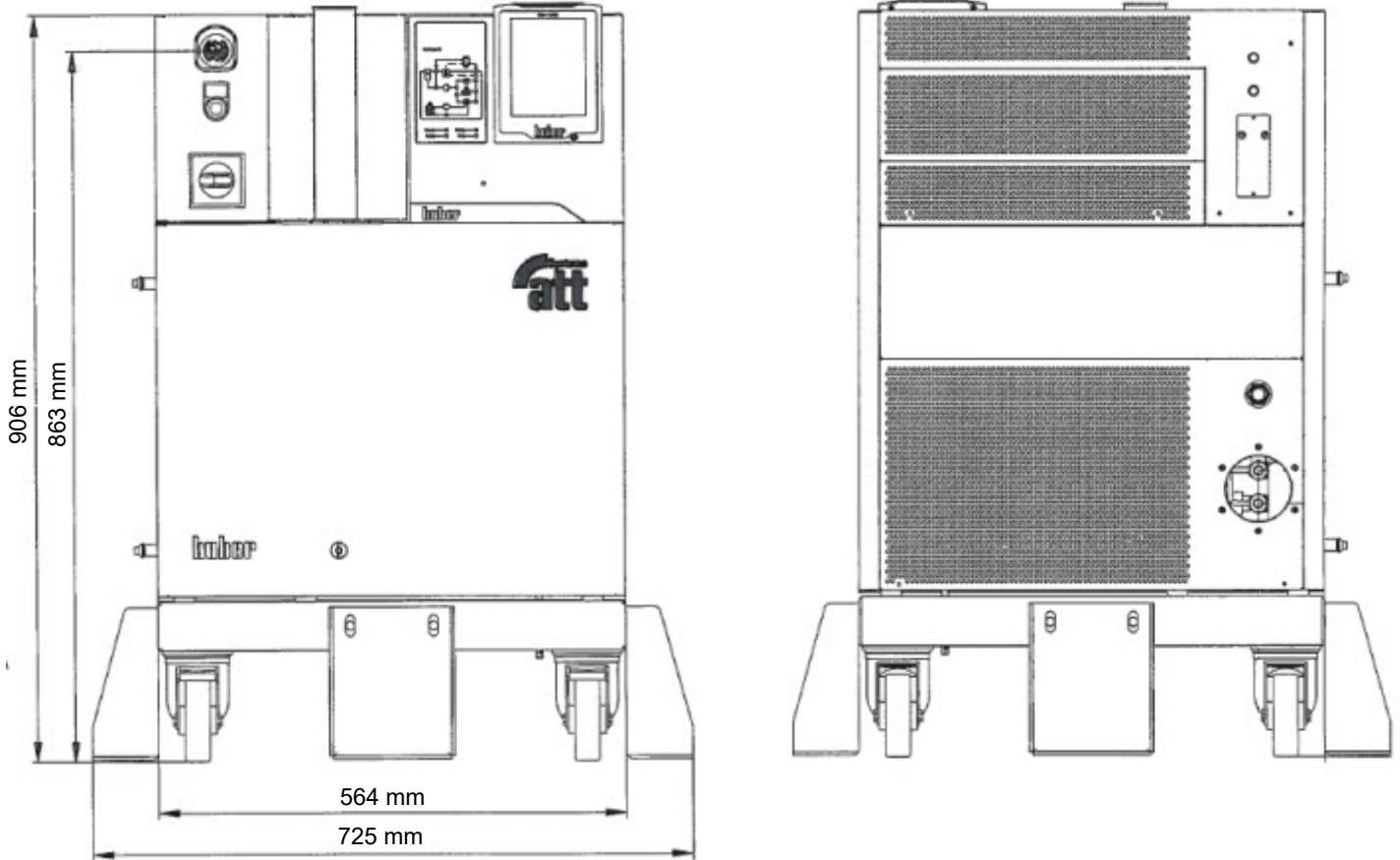
* Standard Ambient Temperature And Pressure (SATP)

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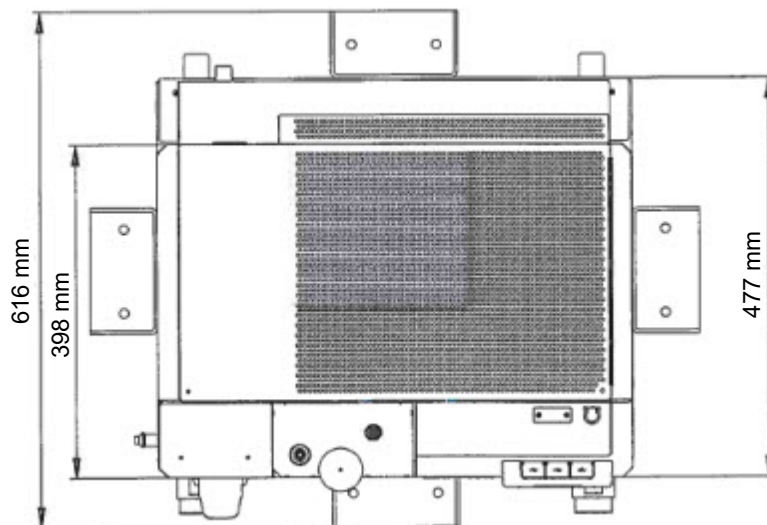
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Chiller Dimensions

Front and Back



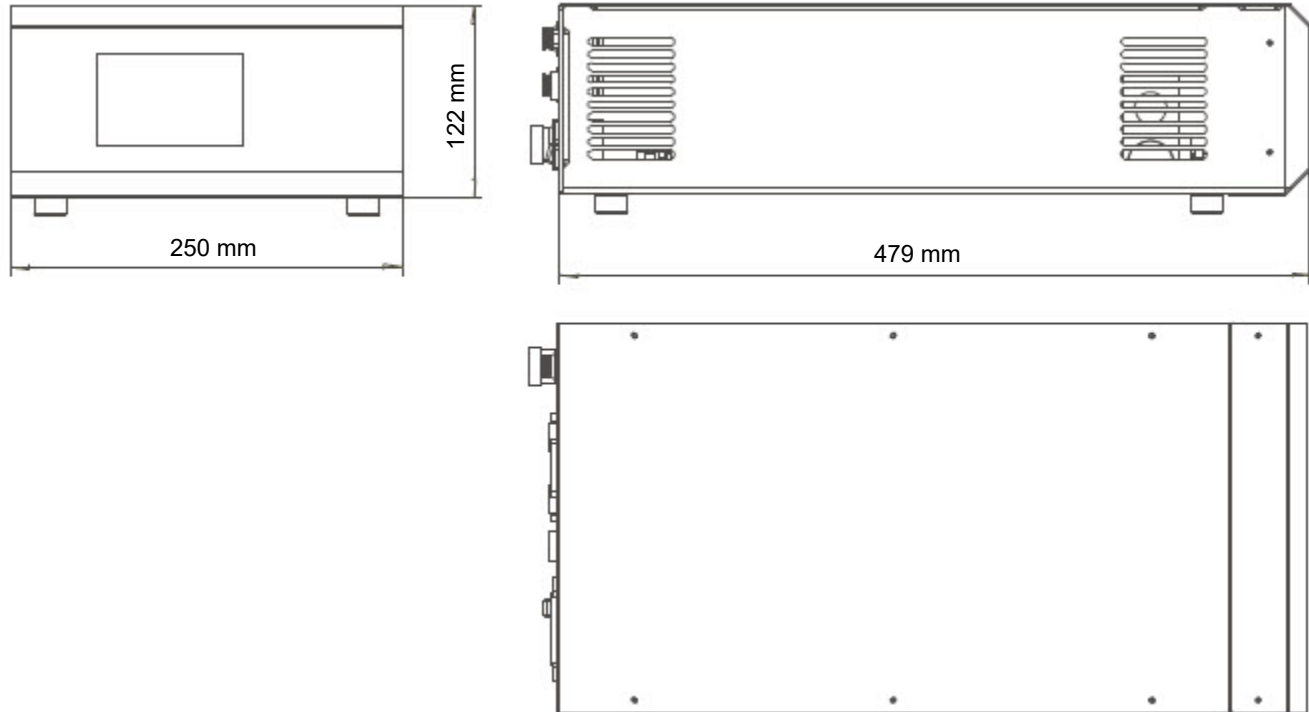
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Controller Dimensions



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