

Cascade TESLA200 Power Semiconductor Probing System

This guide contains information to help prepare your facility for the arrival of your probe station.



DANGER

The safety enclosure interlock must be installed prior to use of this equipment. The interlock must be active whenever high voltage is present. Customers are responsible for ensuring proper connection and that the safety interlock is active before use.



NOTE

Facility requirements for thermal systems are listed separately. See the Facility Planning Guide specific to your thermal system for details.

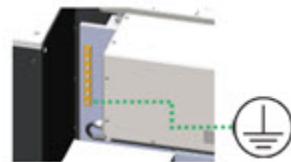
Specifications apply to both semi-automated and fully-automated systems where not specifically differentiated.

Probe Station Requirements

Clean Dry Air (CDA)	General use	<ul style="list-style-type: none"> • ISO 8573.1 Class 1.4.1 (3°C dew point, oil less than 0.01 mg/m³) • 110 l/min (3.9 CFM) at SATP* supplied at 6-8 bar (87 - 116 psi) gage • 8 mm OD push-in tube connection (3 m max tube length)
	MicroChamber probing environment	<ul style="list-style-type: none"> • ISO 8573.1 Class 1.1.1 (-70°C dew point, oil less than 0.01 mg/m³) • Max flow: quick purge up to 280 l/min (9.9 CFM) at SATP* supplied at 6-8 bar (87 - 116 psi) gage • Continuous flow: 57-85 l/min (2-3 CFM) at SATP* supplied at 6-8 bar (87 - 116 psi) gage • 10 mm OD push-in tube connection (3 m max tube length)
	MicroChamber probing environment and general use CDA	<ul style="list-style-type: none"> • ISO 8573.1 Class 1.1.1 (-70°C dew point, oil less than 0.01 mg/m³) • Max flow: quick purge and platen jets up to 330 l/min (11.7 CFM) at SATP* supplied at 6-8 bar (87 - 116 psi) gage • Continuous flow: 57-85 l/min (2-3 CFM) at SATP* supplied at 6-8 bar (87 - 116 psi) gage • 10mm OD push-in tube connection (3 m max tube length) • Chamber atmospheric pressure dew point: <ul style="list-style-type: none"> – Thermal system operated down to +20°C: ≤ -45°C at SATP* (-29°C at 5 bar [73 psi] gage) – Thermal system operated down to -40°C: ≤ -50°C at SATP* (-35°C at 5 bar [73 psi] gage) – Thermal system operated down to -60°C: ≤ -70°C at SATP* (-57°C at 5 bar [73 psi] gage) <p>CDA for general use may be supplied by the MicroChamber supply for a single service supply.</p>
	<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;"> </div> <div> <p>WARNING</p> <p><i>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.</i></p> </div> </div>	
<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;"> </div> <div> <p>NOTE</p> <p><i>Note that the combined values for independent general use and MicroChamber purge flow are not equal to the value for simultaneous general use and MicroChamber purge flow. Modification of the manifold plumbing is required if you are using N₂. See the Summit User Guide for details.</i></p> </div> </div>		

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Vacuum	<ul style="list-style-type: none"> • Wafer hold on chuck and positioners: <ul style="list-style-type: none"> – Required: < 500 mbar (14.8 inHg) absolute, -510 mbar (-15.0 inHg) gage, at up to 3.4 l/min (0.12 CFM) at SATP* – Recommended: < 400 mbar (11.8 inHg) absolute, -610 mbar (-18.0 inHg) gage, at up to 5 l/min (0.18 CFM) at SATP* – 8 mm OD push-in tube connection (3 m max tube length) • Wafer hold only (while under test to ensure measurement performance): <ul style="list-style-type: none"> – Vacuum pressure stability: ± 10 mbar (0.3 inHg) 		
Power	Fully-automated probe station	<p>(Includes station controller, monitors, eVue microscope, wafer handler, 2 load ports)</p> <ul style="list-style-type: none"> • Single phase: 100-240 V $\pm 10\%$, 50/60 Hz • Maximum 500 VA • Main connector: <ul style="list-style-type: none"> – Grounded IEC appliance inlet C14, according to IEC 60320, UL 498, CSA C22.2 no. 42 (for cold conditions) pin-temperature 70°C, 10 A, protection class I. A region dependent power cord connects IEC C14 to common local power plug (1 phase, grounded). • Facility power line fuse: <ul style="list-style-type: none"> – Minimum 15A 	
	Semi-automated probe station	<p>(Includes station controller, monitors, eVue microscope)</p> <ul style="list-style-type: none"> • Single phase: 100-240 V $\pm 10\%$, 50/60 Hz • Maximum 500 VA • Main connector: <ul style="list-style-type: none"> – Grounded IEC appliance inlet C14, according to IEC 60320, UL 498, CSA C22.2 no. 42 (for cold conditions) pin-temperature 70°C, 10 A, protection class I. A region dependent power cord connects IEC C14 to common local power plug (1 phase, grounded). • Facility power line fuse: <ul style="list-style-type: none"> – Minimum 15A • Separate ground connection (PE): <ul style="list-style-type: none"> – Fixed wiring between probe station ground rail and facility PE terminal with ring cable lug/screw terminals – Wire according to IEC60332 / UL2556 – AWG12 / 4 mm²; isolation color: gn/ye – Length ≤ 5 m (17 ft.) 	
	Protection class	<ul style="list-style-type: none"> • I (IEC 61140) 	
	Transient overvoltage	<ul style="list-style-type: none"> • Overvoltage category II (IEC 60364-4-443) 	
	Circuit breaker	<ul style="list-style-type: none"> • Minimum rating: 10,000 AIC 	
For information on other optional components, refer to the data sheet for the particular item.			
Thermal Systems	Refer to the facility preparation guide for your thermal system. Note that the standard low temperature range is adjusted to -55°C due to complexity of the high voltage chuck.		
Environmental Conditions	Operating	<ul style="list-style-type: none"> • Indoors only • Altitude up to 1000 m • Main supply voltage fluctuations not to exceed $\pm 10\%$ of the nominal voltage 	
	Temperature	<ul style="list-style-type: none"> • +17°C to +23°C 	
	Relative humidity	<ul style="list-style-type: none"> • 20% to 60% 	
	Ambient vibration (including floor)	<p>The TESLA200 with integrated vibration isolation (active or passive versions) is intended for use in an environment having background vibrations at or below the ISO Operating Theatre level:</p> <ul style="list-style-type: none"> • Maximum level 4000 micro-in./sec (72 dB), measured using the 1/3-octave-band velocity spectra method 	
	Seismic restraints	Installation of seismic restraints is required to safely restrain the probe station during a seismic event and to meet the safety requirements as outlined by SEMI-S2.	
Additional Equipment	Flowmeter	<ul style="list-style-type: none"> • 0-4 SCFM air flow with quick purge bypass (standard on TESLA200-xx-AP and TESLA200-xx-M MicroChamber stations) 	



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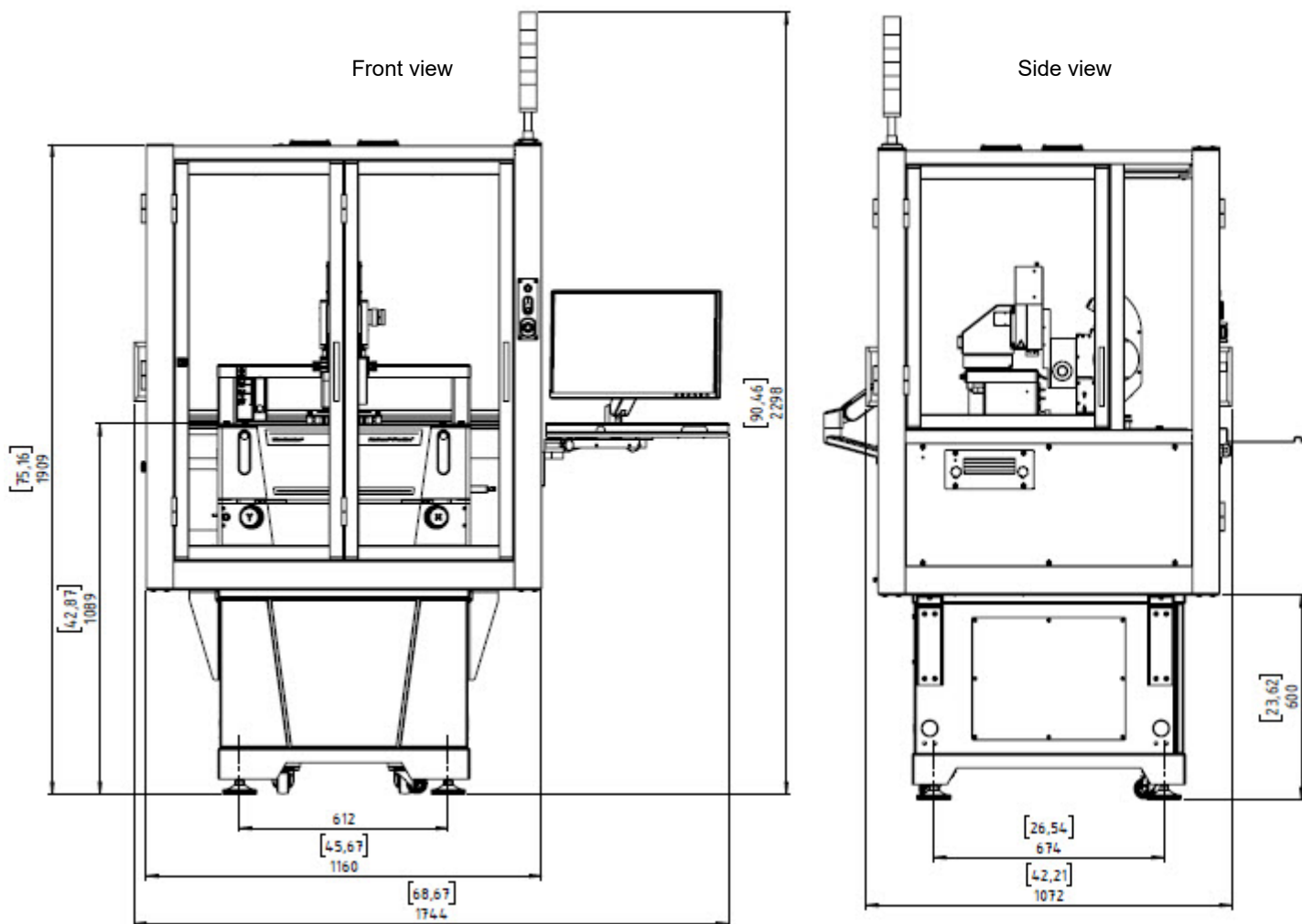
Dimensions	Station	<ul style="list-style-type: none"> • See Fully-automated System on page 5. 	
	Clearance	Front	<ul style="list-style-type: none"> • 900 mm (36 in.) during installation or service
		Back	<ul style="list-style-type: none"> • 800 mm (32 in.) during installation or service
		Left/right	<ul style="list-style-type: none"> • 800 mm (32 in.) during installation or service
		Top	<ul style="list-style-type: none"> • 400 mm (16 in.)
		Additional clearance may be required for thermal system cooling units.	
Weight	Probe station	<ul style="list-style-type: none"> • Fully automated: ~728 kg (1604 pounds) • Semi-automated: ~520 kg (1146 pounds) 	
	Lifting requirements	To avoid personal injury and/or damage to the station, a forklift (minimum 400-pound capacity) is required to move the unit, and a minimum of four to six people will be required to shift it onto the table. Note that the weight is not distributed evenly between all four corners of the station. The rear of the station is heavier than the front.	
Shipping Dimensions (WxDxH)	Station and vibration isolation table	<ul style="list-style-type: none"> • 1163 x 1722 x 1540 mm (46 x 68 x 61in.) 	
Shipping Weight	Probe station crate	<ul style="list-style-type: none"> • Fully automated: ~929 kg (2048 pounds) • Semi-automated: ~721 kg (1590 pounds) 	

* Standard Ambient Temperature And Pressure (SATP)

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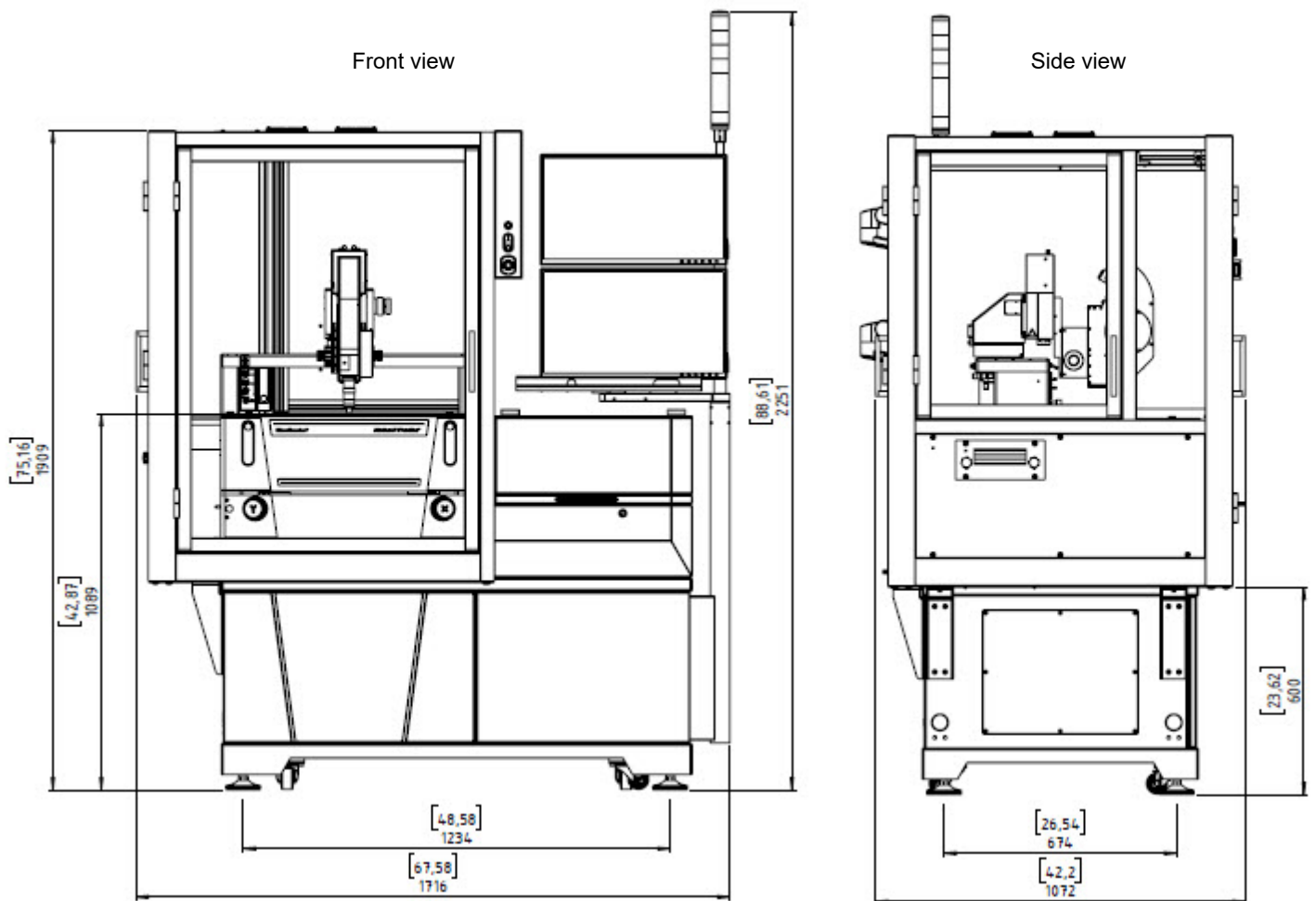
Dimensions (mm [in.])

Semi-automated System



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Fully-automated System



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