

Cascade TESLA200 Power Semiconductor Probing System

This guide defines the facility requirements for operation of your FormFactor TESLA200 probe station. Specifications apply to both semi-automated and fully-automated systems where not specifically differentiated.

Facility requirements for thermal systems are listed separately. See the facility planning guide specific to your thermal system for details.





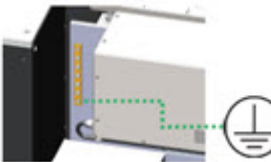
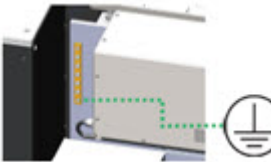
DANGER

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.


Probe Station Requirements

Clean Dry Air (CDA)	CDA requirements vary depending on the system configuration and the temperature range in which the system will operate. CDA for General use purposes is always required, and is used for basic system functions like base table damping and platen cooling. CDA for the MicroChamber probing environment (PURGE) is additionally required for all -M and -AP shielded systems in order to keep a clean, dry environment for high performance triaxial probing, and moisture and ice free probing at temperatures below ambient. CDA requirements for the thermal system (if applicable) are listed separately and are in addition to system requirements. See your thermal system facility planning guide for details.	
	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 • 8 mm 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)
	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 • 8 mm OD push-in tube connection (3 m max tube length) • See MicroChamber probing environment for details on atmospheric pressure dewpoint. <p>CDA for general use may be supplied by the MicroChamber supply for a single service supply.</p>

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Clean Dry Air (CDA) (cont'd)	<p>WARNING</p> <p> 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.</p> <p>NOTE</p> <p> 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.</p>	
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 ±10%, 50/60 Hz • Maximum 1100 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.) 
	Semi-automated probe station	<p>(Includes station controller, monitors, eVue microscope)</p> <ul style="list-style-type: none"> • Single phase: 100-240 V ±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)

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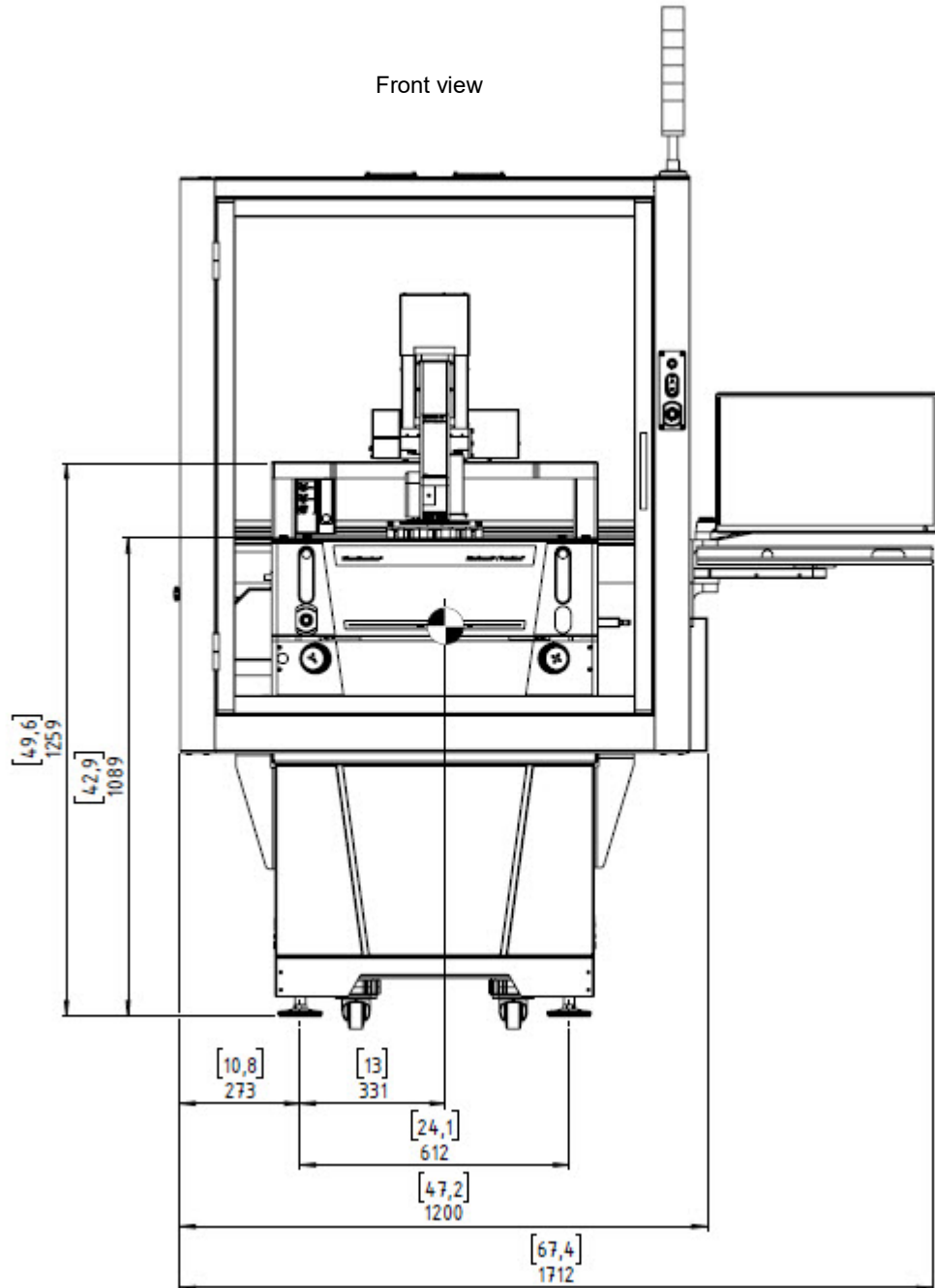
Power (cont'd)	Transient overvoltage	<ul style="list-style-type: none"> • Overvoltage category II (IEC 60364-4-443) 	
	Circuit breaker	<ul style="list-style-type: none"> • Minimum rating: 10,000 AIC 	
	For information on other optional components, refer to the data sheet for the particular item.		
Thermal Systems	<p>Refer to the facility planning 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.</p> <p> NOTE Optional seismic restraints are available for ATT thermal systems which include a chiller.</p>		
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) 	
Dimensions	Station	<ul style="list-style-type: none"> • See Fully-automated System on page 7. 	
	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 lb) • Semi-automated: ~520 kg (1146 lb) 	
	Lifting requirements	<p>The crate is equipped with a ramp for unloading. Two people (minimum) are required to unload the probe station. A pallet jack is required to move the probe station to the installation area. If lifting is necessary to move the unit to the installation area, a sufficiently rated forklift (minimum 2000 lb.capacity) is required to avoid personal injury and/or damage to the probe station.</p>	
Shipping Dimensions (WxDxH)	Station and vibration isolation table	<ul style="list-style-type: none"> • 1221 x 1972 x 2190 mm (48.1 x 78 x 86.2 in.) 	
Shipping Weight	Probe station crate	<ul style="list-style-type: none"> • Up to 1050 kg (2315 lb) 	
	Accessory crates/boxes	<ul style="list-style-type: none"> • Up to 300 kg (662 lb), depending on included accessories 	

* Standard Ambient Temperature And Pressure (SATP)

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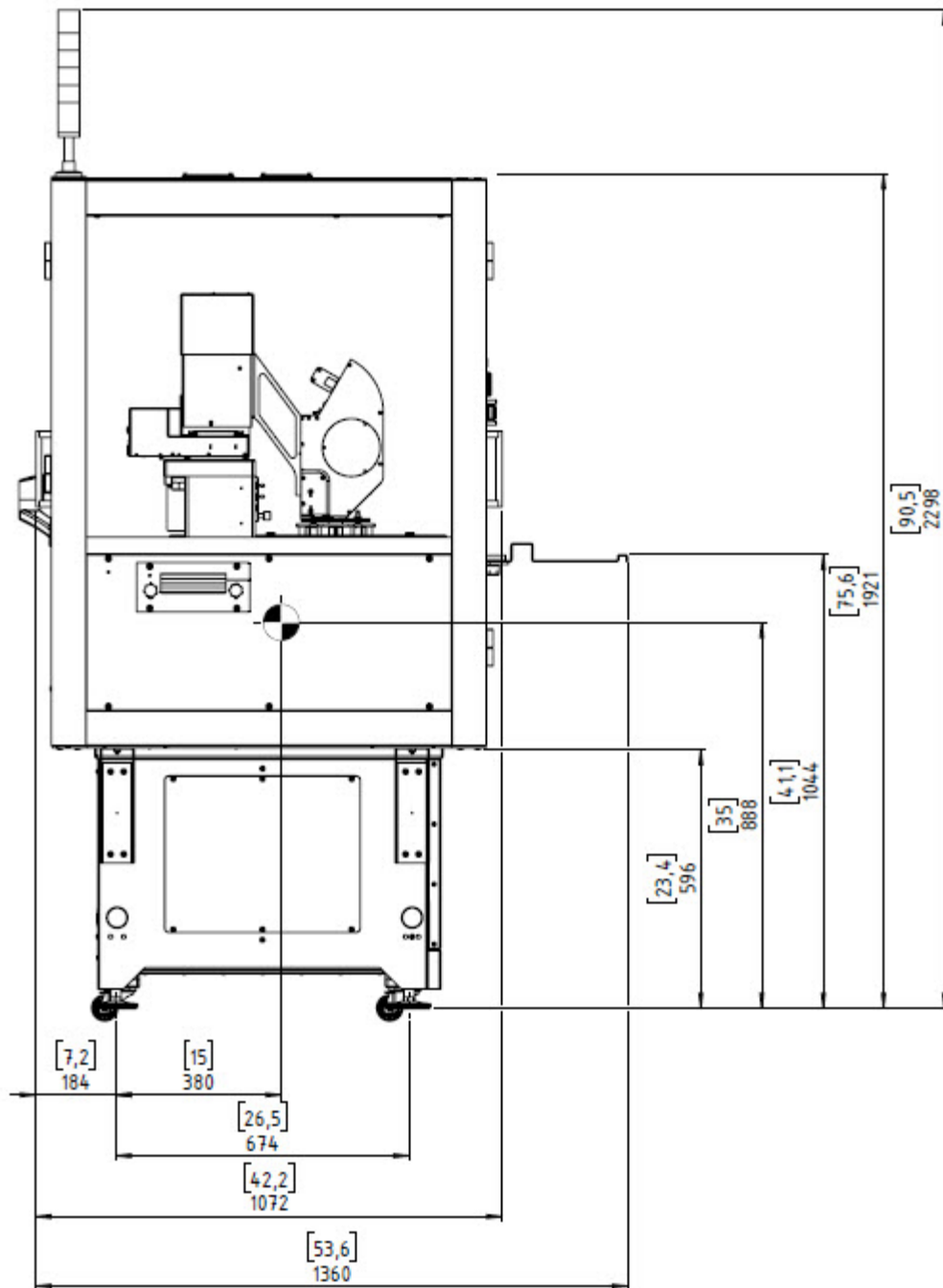
Dimensions (mm [in.])

Semi-automated System

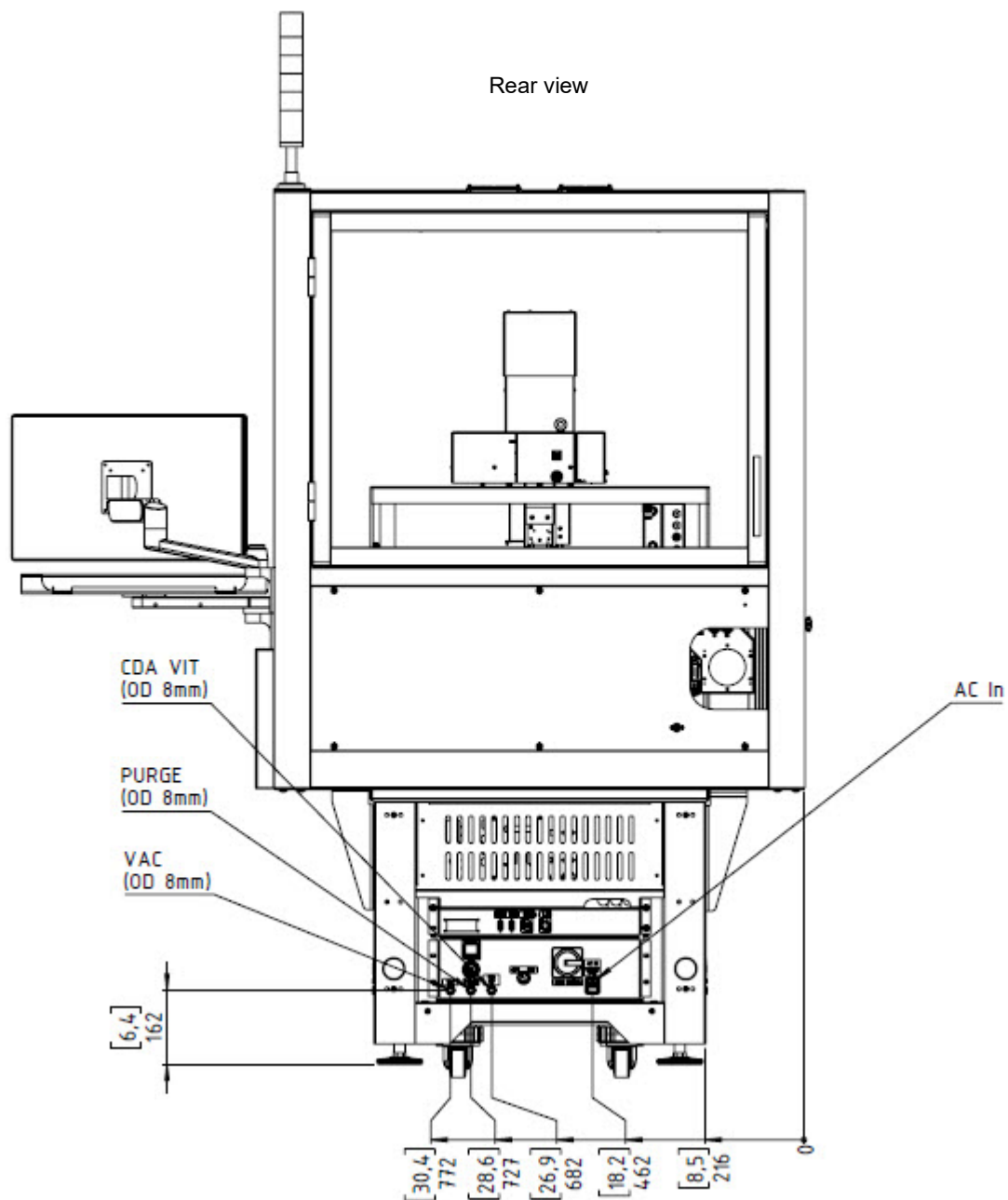


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Side view

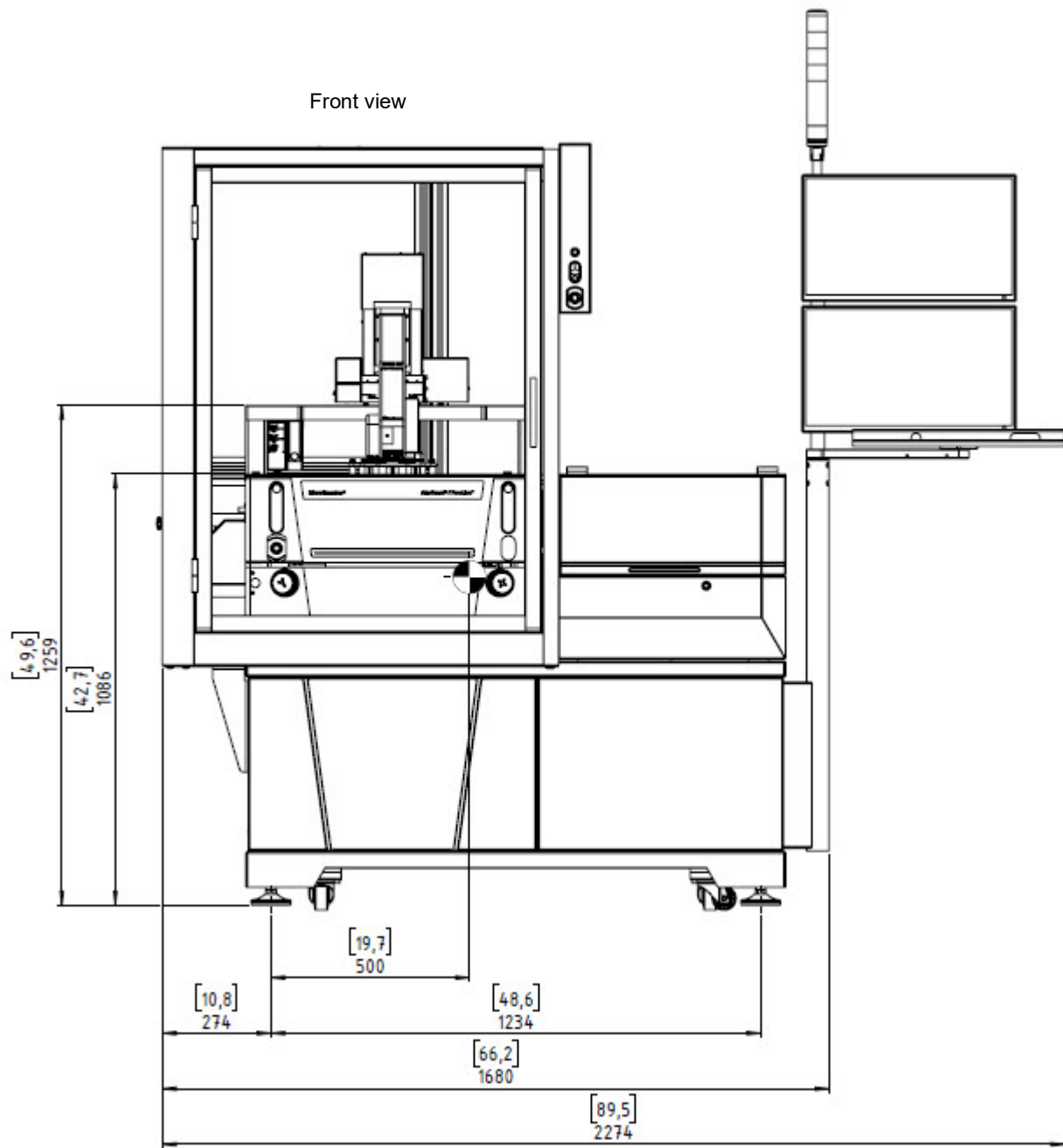


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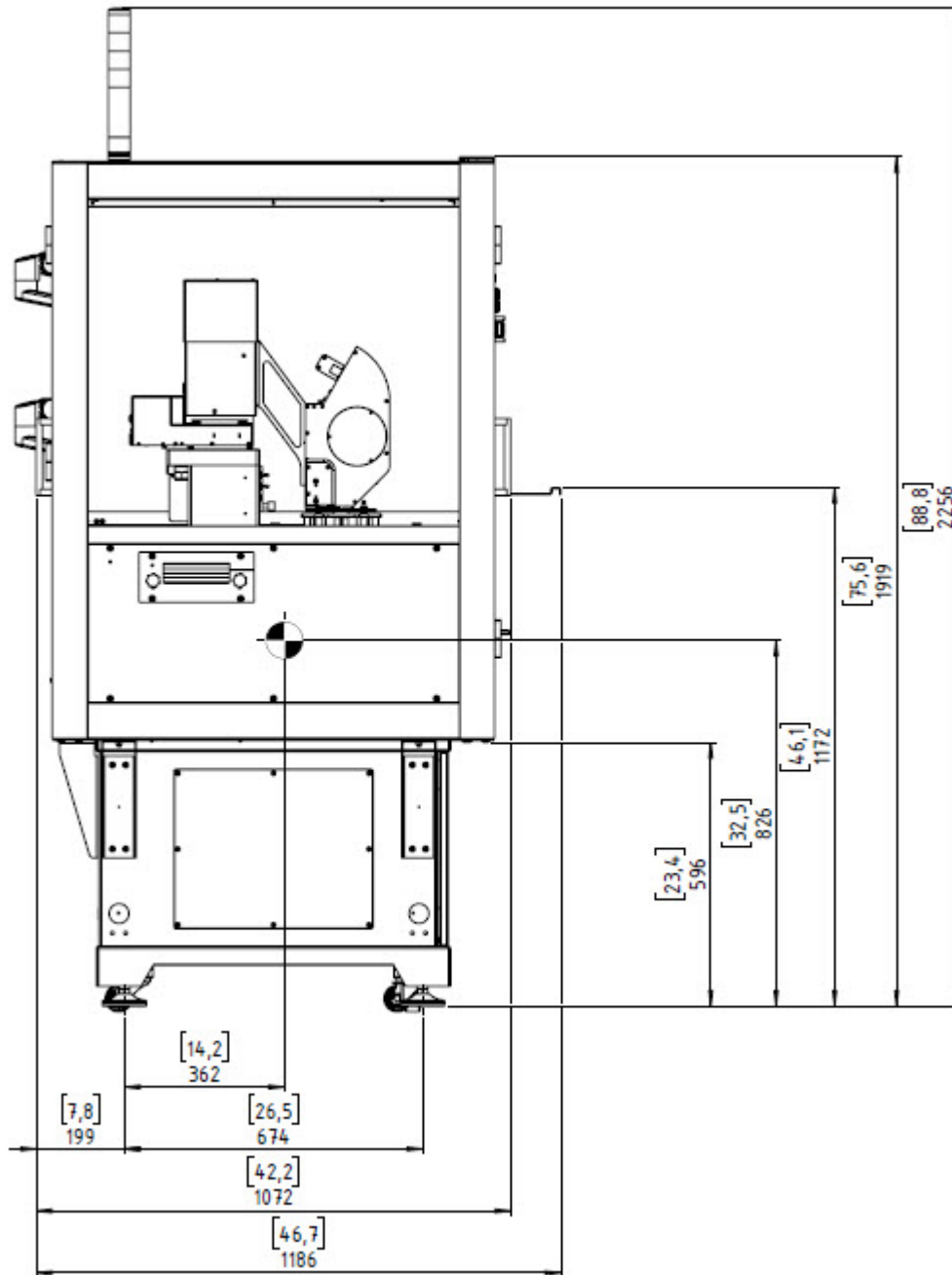
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Fully-automated System



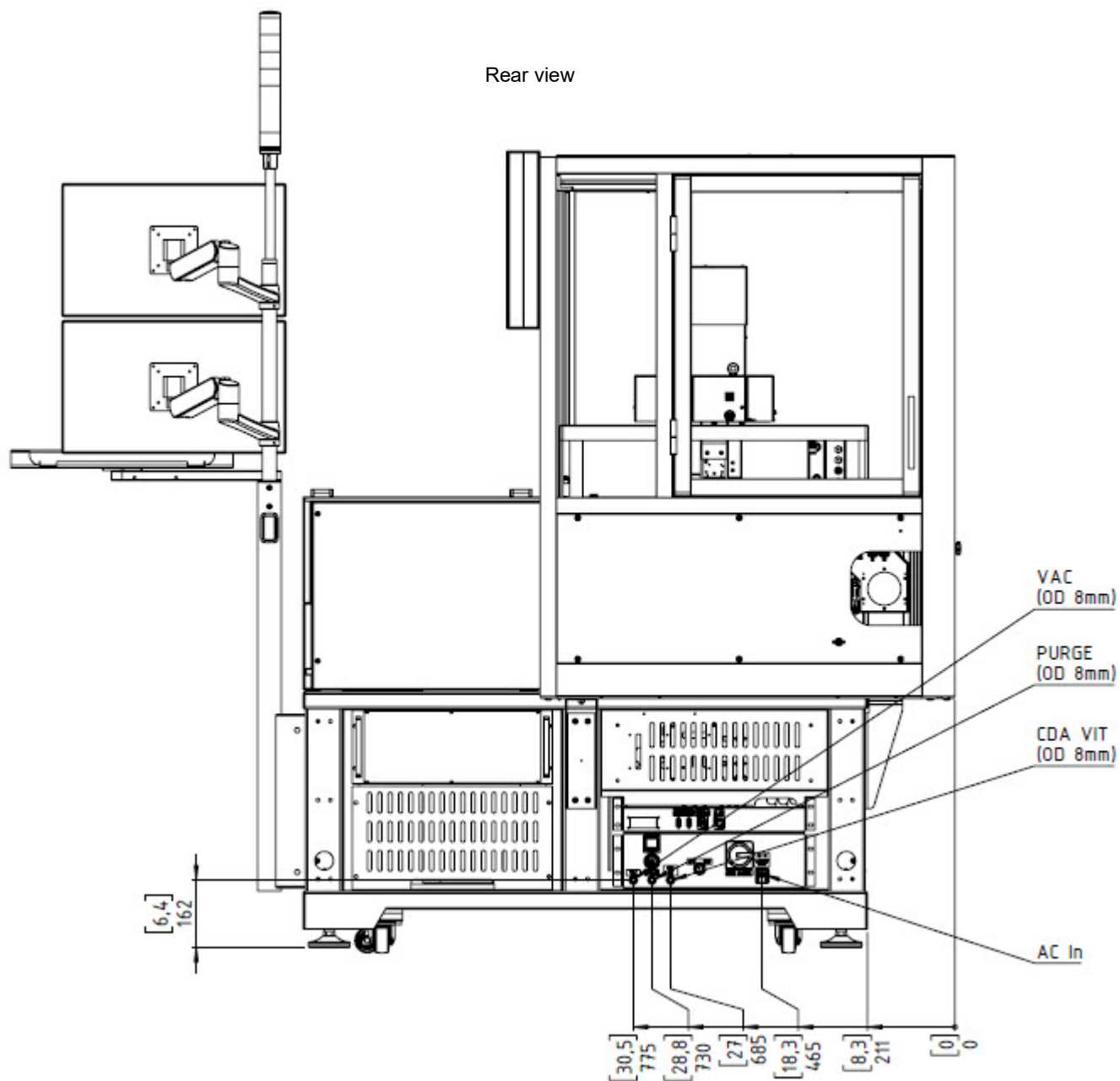
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Side view



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Rear view



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