CM300xi Probe System

This guide contains information to help prepare your facility for the arrival of your FormFactor CM300xi or CM300 probe station.

NOTE

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

Probe Station Requirements

Clean Dry Air (CDA)	General use	• ISO 8573.1 Class 1.4.1 (3°C pressure dew point, oil less than 0.01 mg/m^3) • Fully-automated (with wafer handler): flow rate insignificant, 6-10 bar (87-145 psi) gage • Semi-automated: flow rate insignificant, 5-10 bar (72-145 psi) gage • 8 mm OD push-in tube connection **NOTE** *The specifications listed for MicroChamber probing environment (purge) apply only to the fully-shielded and shielded system configurations. They are not applicable to the open system configuration.*
	MicroChamber probing environment (purge)	• ISO 8573.1 Class 1.1.1 (-70°C pressure dew point, oil less than 0.01 mg/m^3) • Semi- and fully-automated systems (one station): – Max flow: 240 l/min (8.5 CFM) at SATP* supplied at 7.5 bar (109 psi) gage – Continuous flow: 80 l/min (2.8 CFM) at SATP* supplied at 5 bar (73 psi) gage • Dual-prober systems (two stations): – Max flow: 480 l/min (17 CFM) at SATP* supplied at 7.5 bar (109 psi) gage – Continuous flow: 160 l/min (5.6 CFM) at SATP* supplied at 5 bar (73 psi) gage **NOTE** *Lower available peak flow may extend cooling and conditioning times.* • 12 mm OD push-in tube connection (3 m max tube length) • Chamber atmospheric pressure dew point: – 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: ≤ -80°C at SATP* (-69°C at 5 bar [73 psi] gage) **WARNING** *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.*
Vacuum	• Wafer hold on chuck and positioners: – Required: < 250 mbar (7.4 inHg) absolute, -760 mbar (-22.5 inHg) gage, at up to 10 l/min (0.35 CFM) at SATP* – 10 mm OD push-in tube connection (3 m max tube length) • Wafer hold only (while under test to ensure measurement performance): – Vacuum pressure stability: ± 10 mbar (0.3 inHg)	

<table>
<tr><td rowspan="6">Power</td><td>Dual-prober probe station</td><td>With MHU300</td><td>(Includes 2 semi-automated stations, wafer handler, 1 thermal system, second thermal system is independently powered and integrated in the prober EMO)
• 3 phase: 120/208 VAC 60 Hz, 230/400 VAC 50 Hz, or 200 VAC 50/60 Hz
• Maximum: 8100 VA
• Short circuit current rating: 10 kA (UL508A)
• Source:
– North America: NEMA L21-30P 30A/208V/3~ grounded mains plug
– Europe: IEC 60309 32A/400V/3~ grounded mains plug
– Asia: IEC 60309 32A/400V/3~ grounded mains plug
Japan: NEMA L15-30P 30A/250V/3~, 4 wire grounding</td></tr>
<tr><td rowspan="2">Fully-automated probe station</td><td>With MHU300</td><td>(Max. configuration includes 1 semi-automated station, wafer handler, 2 load ports, 1 thermal system)
• 3 phase: 120/208 VAC 60 Hz, 230/400 VAC 50 Hz, or 200 VAC 50/60 Hz
• Maximum: 8100 VA
• Short circuit current rating: 10 kA (UL508A)
• Main connector:
– North America: NEMA L21-30P 30A/208V/3~ grounded mains plug
– Europe: IEC 60309 32A/400V/3~ grounded mains plug
– Asia: IEC 60309 32A/400V/3~ grounded mains plug
– Japan: NEMA L15-30P 30A/250V/3~, 4 wire grounding
• Facility power line fuse:
– 3 x 32A IEC60269 class gG or 3 x 30A UL248 class J (lead fuses)
– System input contains a 3x 30 A fuse according to UL 489</td></tr>
<tr><td>With MHU301 (MHU only)</td><td>NOTE
These specifications apply only to the MHU301. For complete system requirements, add the power specifications shown for Semi-automated probe station to the specifications listed here.
• Single phase: 100-240VAC ±10%, 50/60 Hz
• Maximum 1000 VA
• Short circuit current rating: 5 kA (UL508A)
• Main connector:
– 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: 1x 16A IEC60269 class gG or 1x 15A UL248 class J (lead fuses)
• Protection class: I (IEC 61140)
• Transient overvoltage: overvoltage category II (IEC 60364-4-443)</td></tr>
<tr><td>Semi-automated probe station</td><td colspan="2">(Includes station, controller, monitors, microscope)
• Single phase: 100-127 VAC or 208-240 VAC 50/60 Hz
• Maximum 1500 VA
• Short circuit current rating: 5 kA (10 kA ≤ 125 VAC) (UL508A)
• Main connector: 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: semi-automated 1x 16A IEC60269 class gG or 1x 15A UL248 class J (lead fuses)</td></tr>
<tr><td>Circuit breaker</td><td colspan="2">• Minimum rating: 10,000 AIC</td></tr>
<tr><td colspan="3">For information on other optional components, refer to the data sheet for the particular item.</td></tr>
</table>

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Thermal Systems	Refer to the facility preparation guide for your thermal system.		
Environmental Conditions	Operating	• Altitude up to 2000 m • Main supply voltage fluctuations not to exceed ± 10% of the nominal voltage	
	Temperature	• Operating range: +18°C to +24°C • Max. temperature variation: +/- 1 K	
	Relative humidity	• 20% to 60% (20% to 50% with sub-ambient thermal system)	
	Ambient vibration (including floor)	The probe station is intended for use in an environment having background vibrations at or below the ISO Operating Theatre level: • Maximum level 4000 micro-in./sec (72 dB), measured using the 1/3-octave-band velocity spectra method	
	Clean room class	• Class ISO 7 corresponding to ISO 14644-1 (equivalent class 10,000 per US FED STD209E)	
Dimensions (WxDxH)	Probe station(s)	See Dimensions on page 4 for details on dual prober, fully- and semi-automated system configurations.	
	Accessories	Additional height due to optional accessories such as cameras and laser cutters can add up to the station maximum of 900 mm.	
	Joystick	• 102 x 150 x 150 mm (4 x 6 x 6 in.), with connector installed • Located on the control console. Alternate placement may require an additional table.	
	Clearance	Front	• 800 mm (32 in.) for operator/installation during installation or service
		Back	• 1000 mm (39 in.) for service access • 800 mm (32 in.) when using optional holders for monitor, keyboard or test instrument
		Left/right	• 200 mm (8 in.) for cables, maximum 450 mm (18 in.) for use of control console • 800 mm (32 in.) during installation or service, or permanently when using optional holders for monitor, keyboard or test instrument
		Top	• 400 mm (16 in.)
		Additional clearance may be required for thermal system cooling units.	
Weight	Probe station	Dual-prober	• Maximum 2800 kg (6170 pounds)
		Fully-automated	• With MHU300 = max.1650 kg (3640 pounds) • With MHU301 = max. 1300 kg (2870 pounds)
		Semi-automated	• Maximum 1150 kg (2540 pounds)
	Actual weight depends on configuration. A forklift is required for moving/unpacking the station(s) and MHU300.		
Shipping Dimensions (WxDxH)	Probe station crate(s)	• 1430 x 1930 x 2050 mm (56 x 76 x 81 in.)	
	Loader crate	• MHU300 = 1400 x 1950 x 1850 mm (55 x 77 x 73 in.) • MHU301 = 740 x 1180 x 1590 mm (29 x 46 x 63 in.)	
	Accessories, up to 5 boxes	• Maximum size: 1400 x 1500 x 1600 mm (55 x 59 x 63 in.)	
Shipping Weight	Station crate(s)	• ~1350 kg (2980 pounds)	
	Loader crate	• MHU300 = ~500 kg (1100 pounds) • MHU301 = ~200 kg (440 pounds)	
	Accessories, up to 5 boxes	• Maximum weight depends on system configuration	

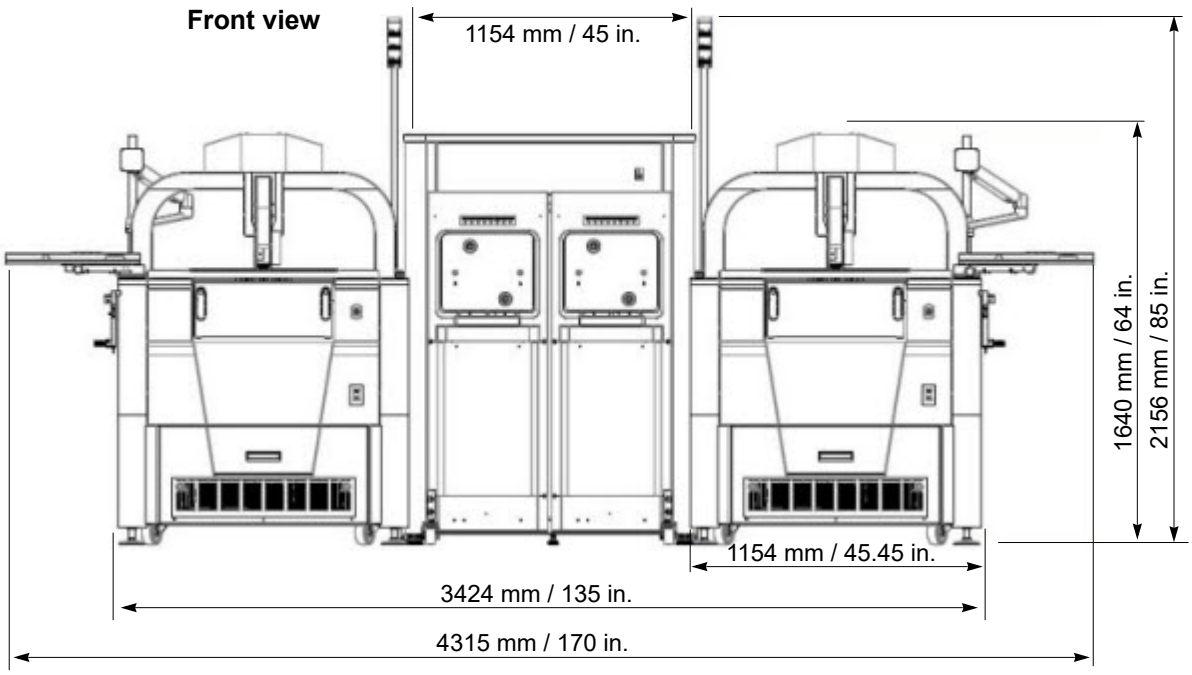
* Standard Ambient Temperature And Pressure (SATP)

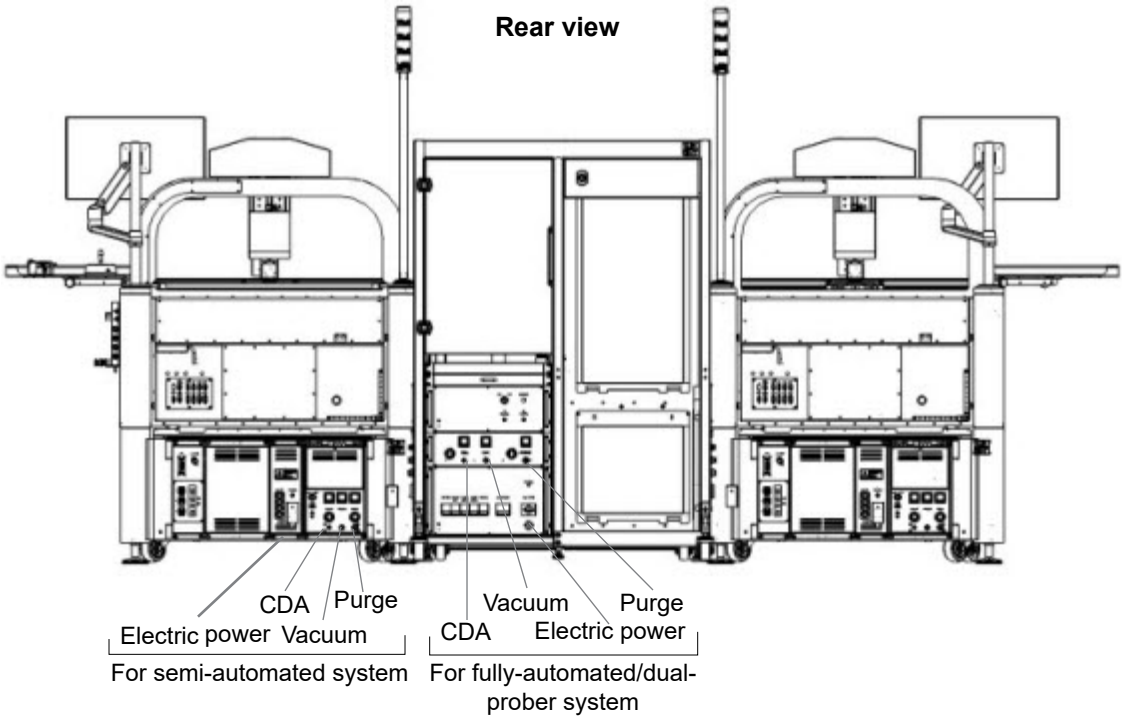
Dimensions (in mm)

NOTE

Maximum height is shown. Actual height is determined by light tower type. Microscope transport type varies depending on system configuration.

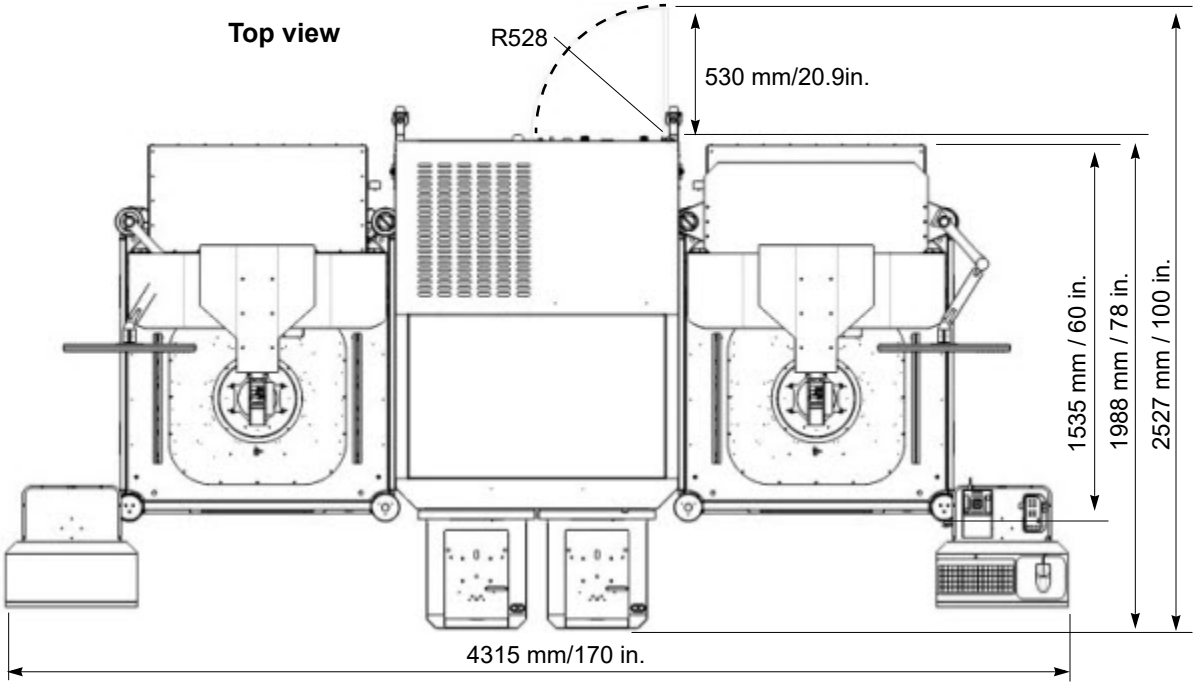
MHU300



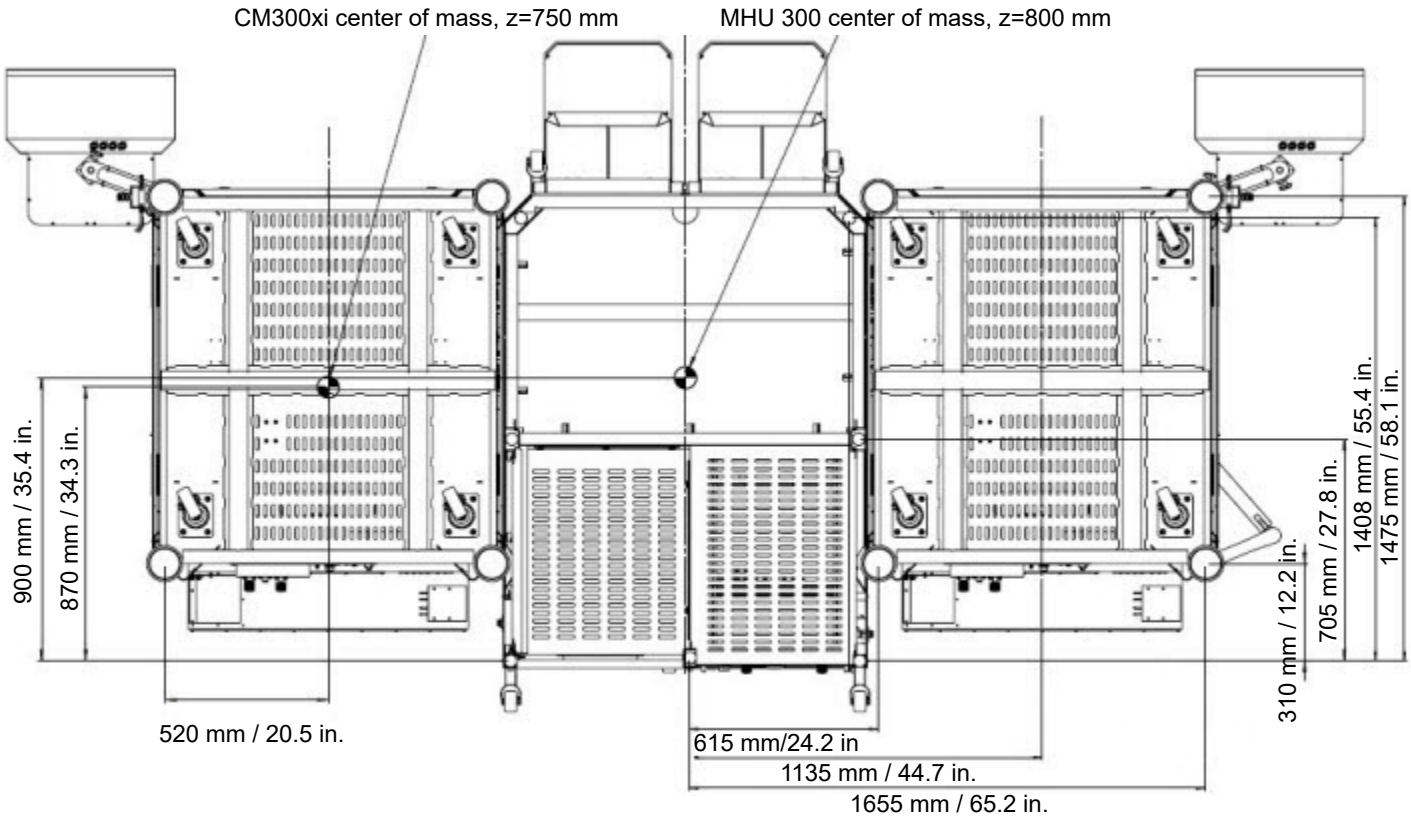


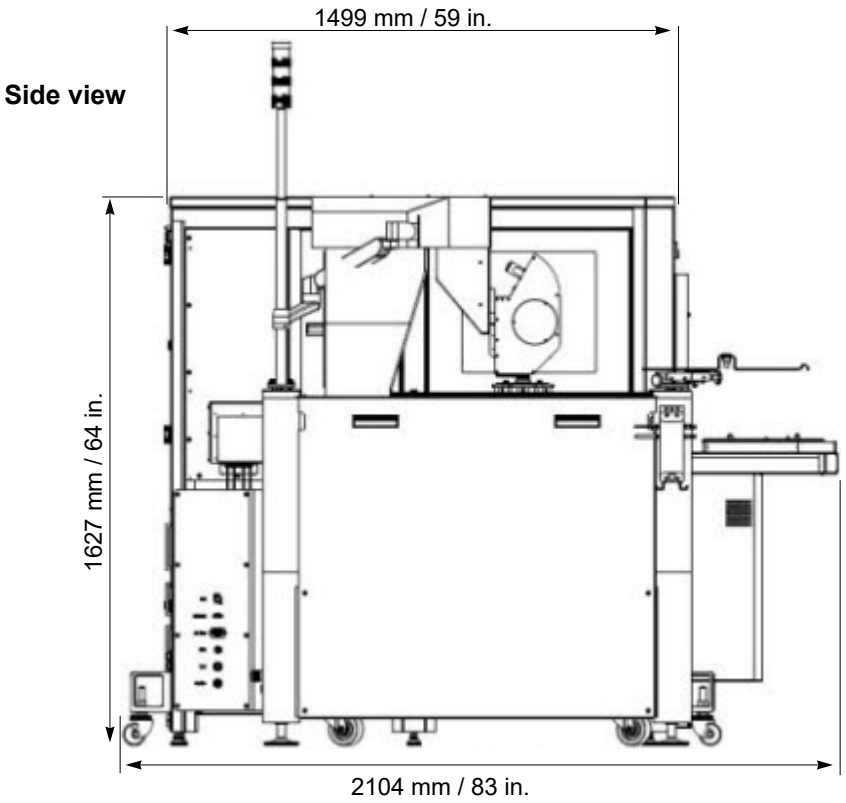
CM300xi Probe System

Top view



Bottom view

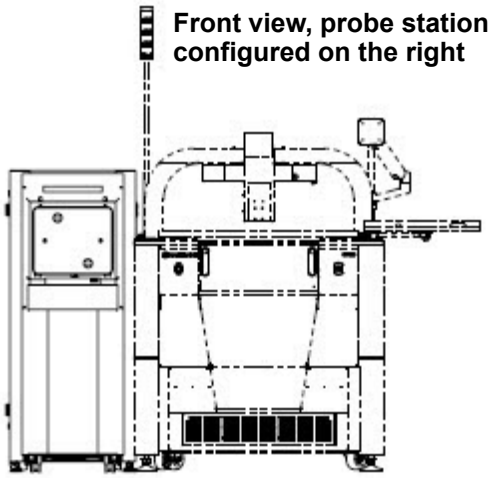



Side view
1499 mm / 59 in.
1627 mm / 64 in.
2104 mm / 83 in.

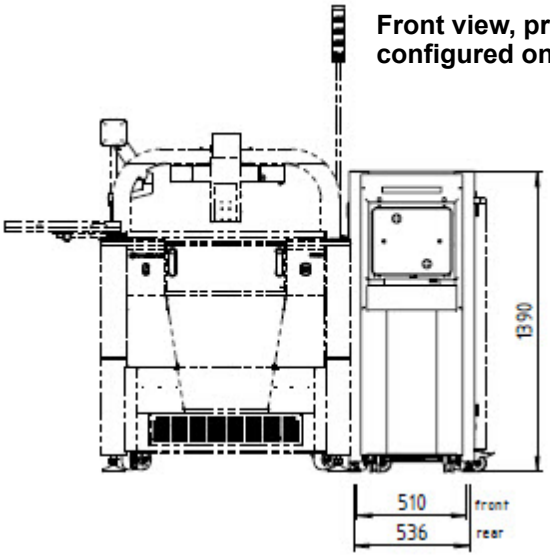
CM300xi Probe System

MHU301

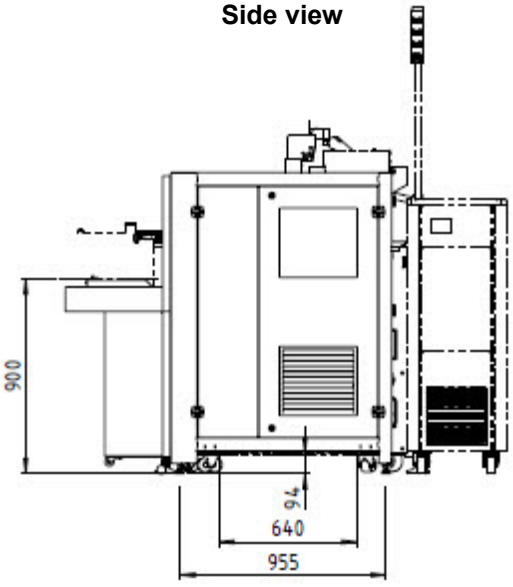
Front view, probe station configured on the right



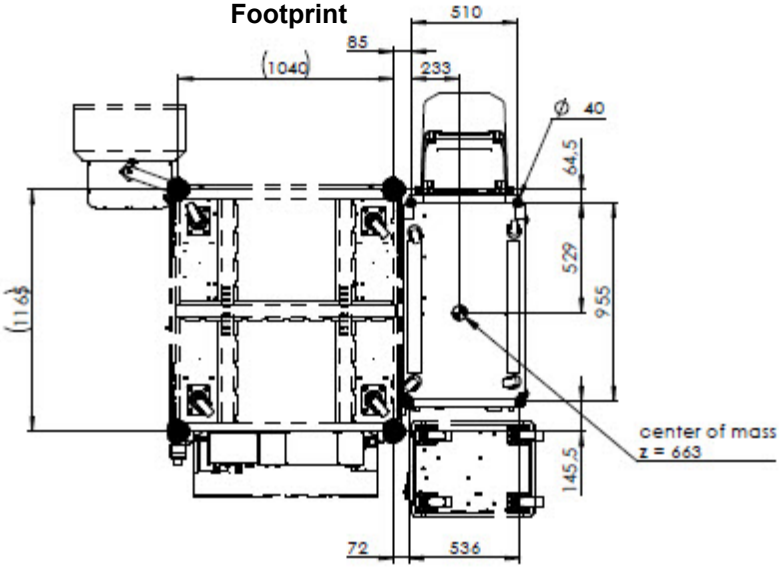
Front view, probe station configured on the left



Side view



Footprint



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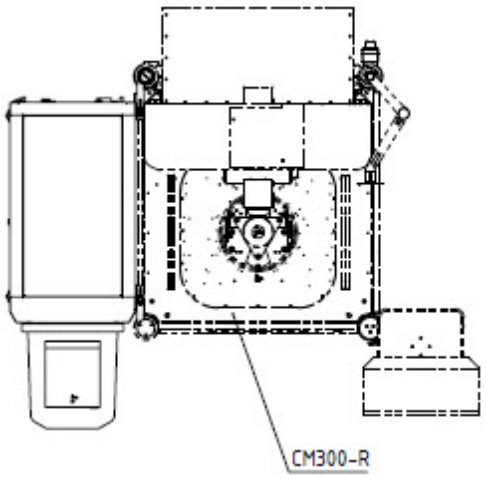
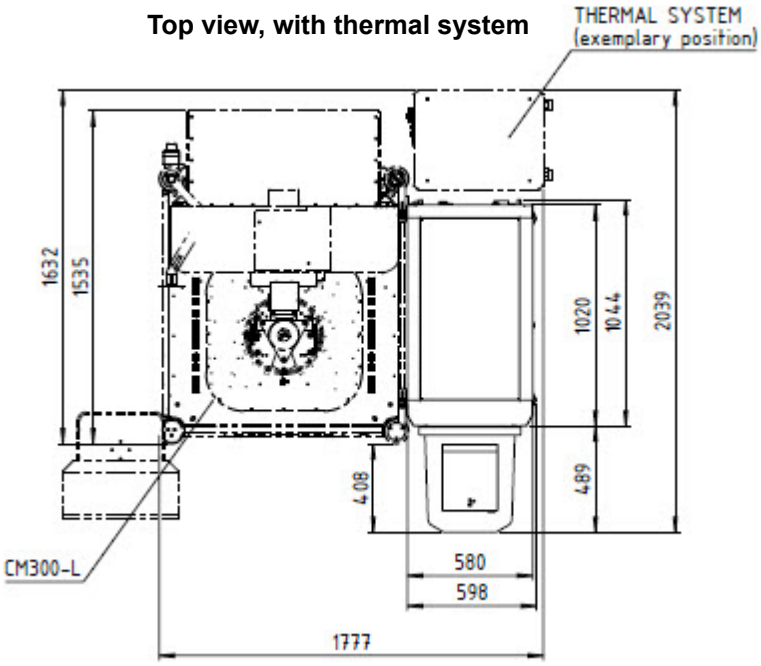
Top view, without thermal system



Top view, with thermal system



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