CM300xi-SiPh-LS Probe System

This guide defines the facility requirements for operation of your FormFactor CM300xi-SiPh-LS probe station. For definitions of the icons in this document, please refer to the notational conventions described in your user guide.

NOTE | HINWEIS | REMARQUE

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

DANGER | DANGER| PERICOLO

Customer instrumentation configured with lasers above class 1 and placed inside the rack must have a compatible interlock system. Customer instrumentation with lasers above class 1 must be unplugged or placed in the OFF position prior to servicing or decommissioning the system. If the interlock system must be active during alignment and calibration, lasers are required to be class 1.

Geräte des Kunden, die mit Lasern über Klasse 1 konfiguriert und im Rack platziert sind, müssen über ein kompatibles Verriegelungssystem verfügen. Bei Geräten des Kunden mit Lasern über Klasse 1 muss vor der Wartung oder Außerbetriebnahme des Systems der Stecker gezogen oder der Schalter in die AUS-Position gestellt werden. Wenn das Verriegelungssystem während der Ausrichtung und Kalibrierung aktiviert sein muss, müssen die Laser der Klasse 1 entsprechen.

Les instruments du client configurés avec des lasers de classe supérieure à la classe 1 et placés à l'intérieur du bâti doivent être dotés d'un système de verrouillage compatible. Les instruments du client munis de lasers de classe supérieure à la classe 1 doivent être débranchés ou placés en position OFF avant l'entretien ou la mise hors service du système. Si le système de verrouillage doit être activé pendant l'alignement et l'étalonnage, les lasers doivent être de classe 1.

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 requirements for the thermal system (if applicable) are listed separately.	
	General use (CDA VIT)	• ISO 8573.1 Class 1.4.1 (3°C pressure dew point, oil less than 0.01 mg/m3) • 8 mm OD push-in tube connection • 6-10 bar (87-145 psi) • CM300xi-SiPh-LS-S, -F: – Semi-automatedCM300xi-SiPh-LS: max. 10 l/min – Fully-automatedCM300xi-SiPh-LS with MHU301 (1 loadport): max. 40 l/min
	MicroChamber probing environment (PURGE) (for shielded and fully-shielded system configurations only.)	• ISO 8573.1 Class 1.x.1 (required pressure dew point is dependent on operating temperature, oil less than 0.01 mg/m3), 7-10 bar (102-145 psi) – Required pressure dew point of PURGE air is dependent on operating temperature range: ○ Thermal system operated down to +20°C: ≤-20°C at SATP* -> ISO8573.1 class 1.3.1 ○ Thermal system operated down to -40°C: ≤-50°C at SATP* -> ISO8573.1 class 1.1.1 ○ Thermal system operated down to -60°C: ≤-70°C at SATP* -> ISO8573.1 class 1.1.1 • Semi- and fully-automated systems (one station): – Max flow: 240 l/min (8.5 CFM) at SATP* – Continuous flow: 80 l/min (2.8 CFM) at SATP* **NOTE | HINWEIS | REMARQUE** *Lower available peak flow may extend cooling and conditioning times.* *Ein niedrigerer verfügbarer Spitzenfluss kann die Kühl- und Konditionierungszeiten verlängern.* *Un débit de pointe plus faible peut prolonger les temps de refroidissement et de conditionnement.* • 12 mm OD push-in tube connection (3 m max tube length)

CDA (cont'd)	MicroChamber probing environment (purge) (cont'd)	 **DANGER | ACHTUNG | DANGER** *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.* *FormFactor schreibt die Verwendung von Stickstoff anstelle von reiner Trockenluft nicht vor und spricht hierfür auch keine Empfehlung aus, was die verschiedenen FormFactor-Systeme anbetrifft. Es besteht nämlich das Risiko, dass am Einsatzort der Luftsauerstoff aufgebraucht wird.Wenn Sie sich für die Verwendung von Stickstoff entscheiden, da Ihre Testkonfiguration für die MicroChamber-Spülung die Verwendung von Stickstoff anstelle von reiner Trockenluft erfordert, ist eine Begrenzung der Zeit, in der das System im Schnellspülmodus (Quick Purge) verweilt, erforderlich, da fortlaufend Stickstoff aus dem System an die Umwelt abgegeben wird. Sprechen Sie Ihren Systemaufbau mit Ihren Beauftragten für Arbeitssicherheit und Anlagenmanagement durch um sicherzustellen, dass ausreichend Sauerstoff in der Raumluft Ihrer Arbeitsumgebung vorhanden ist und eine übermäßige Anreicherung der Raumluft mit Stickstoff verhindert werden kann. Darüber hinaus wird die Verwendung eines Alarmsystems mit Sauerstoffsensor empfohlen.* *FormFactor n'approuve ni ne recommande l'utilisation d'azote au lieu d'air sec propre sur aucun de ses systèmes, en raison du risque d'appauvrissement en oxygène que cela peut entraîner en milieu de travail.Si vous décidez d'utiliser de l'azote car votre configuration de contrôle nécessite son emploi au lieu d'air sec propre pour purger le système MicroChamber, vous devez limiter le temps consacré en mode de purge rapide (Quick Purge), car l'azote sera constamment évacué du système vers l'environnement. Discutez de votre configuration avec les services responsables de la sécurité et des installations pour vous assurer que le débit d'oxygène dans l'environnement de travail est suffisamment adéquat pour éviter une accumulation excessive d'azote. L'utilisation d'un détecteur d'oxygène est également recommandée.*
Vacuum	• Wafer hold on chuck and positioners: – Required: < 250 mbar (7.4 inHg) absolute/ < -760 mbar (-22.5 inHg) gauge at SATP*. Absolute vacuum pressure must not increase for leakage rates up to 10 l/min (0.35 CFM). – 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)	

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<table>
<tr><td rowspan="5">Power</td><td>Probe station</td><td>NOTE | HINWEIS | REMARQUE
Probe station configurations:
• Fully-automated: max. configuration includes 1 semi-automated station, wafer handler (see MHU301 for MHU requirements), 2 load ports, 1 thermal system
• Semi-automated: includes station, controller, monitors, microscope
• Single phase: 100-240VAC ±10%, 50/60 Hz
• Maximum 1500 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)
• Circuit breaker: 10,000 AIC (minimum rating)
• Overvoltage:
– Transient overvoltage Category II (IEC 60364-4-443)
– Main supply voltage fluctuations not to exceed ± 10% of the nominal voltage</td></tr>
<tr><td>MHU301</td><td>• 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)</td></tr>
<tr><td>RACK-SIPH-LS (Power strip)</td><td>• Nominal input voltage: 100-240 V
• Input frequency: 50/60 Hz
• Output connectors: IEC320 C13 outlets
• Maximum total current draw:
– 16 A @100-240 V (UL): MAX VA ≤2400
– 12 A @100-240 V (cUL): MAX VA ≤2400
– 10 A @ 220-240 V (VDE): MAX VA ≤2400
• Each power strip (2) requires a wall outlet</td></tr>
<tr><td colspan="2">For information on other optional components, refer to the data sheet for the particular item.</td></tr>
<tr><td>Thermal systems</td><td colspan="2">Refer to the facility preparation guide for your thermal system.</td></tr>
<tr><td rowspan="6">Environmental conditions</td><td>Operating</td><td>• Indoors only
• Altitude up to 1000 m</td></tr>
<tr><td>Temperature</td><td>• +18°C to +24°C</td></tr>
<tr><td>Relative humidity</td><td>• 20% to 60%</td></tr>
<tr><td>IP rating</td><td>• X0</td></tr>
<tr><td>Pollution degree</td><td>• 2</td></tr>
<tr><td>Ambient vibration (including floor)</td><td>The TESLA300 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:
• Maximum level 4000 micro-in./sec (72 dB), measured using the 1/3-octave-band velocity spectra method</td></tr>
<tr><td>Clean room class</td><td>• Class ISO 7 corresponding to ISO 14644-1 (equivalent class 10,000 per US FED STD209E)</td></tr>
</table>

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Dimensions (WxDxH)	Probe station(s)	See Dimensions (shown in mm [in.]) on page 5 for details on fully- and semi-automated system configurations.	
	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	Fully-automated	• With MHU301 ≈ max. 1465 kg (3230 lb)
		Semi-automated	• Max. ≈1315 kg (2899 lb)
	RACK-SIPH-LS	• 471 lb (214 kg) (empty) Loading on both inside and outside shelves is limited to 27 kg (60 lb) per shelf. The top of the rack is not intended for use as a shelf or storage area.	
	Actual weight depends on configuration. A forklift is required for moving/unpacking the station.		
Shipping dimensions (WxDxH)	Probe station crate(s)	• 1630 x 1950 x 2250 mm (64 x 77 x 89 in.)	
	Loader crate	• MHU301 = 740 x 1180 x 1590 mm (29 x 46 x 63 in.)	
	RACK-SIPH-LS crate	• 1400 x 1000 x 2100 mm (55 x 39 x 83 in.)	
	Accessories, up to 5 boxes	• Max. size: 1400 x 1500 x 1600 mm (55 x 59 x 63 in.)	
Shipping weight	Station crate(s)	• ~1565 kg (3450 pounds)	
	Loader crate	• MHU301 ≈ 200 kg (440 lb)	
	RACK-SIPH-LS crate	• TBD	
	Accessories, up to 5 boxes	• Maximum weight depends on system configuration	

* Standard Ambient Temperature And Pressure (SATP)

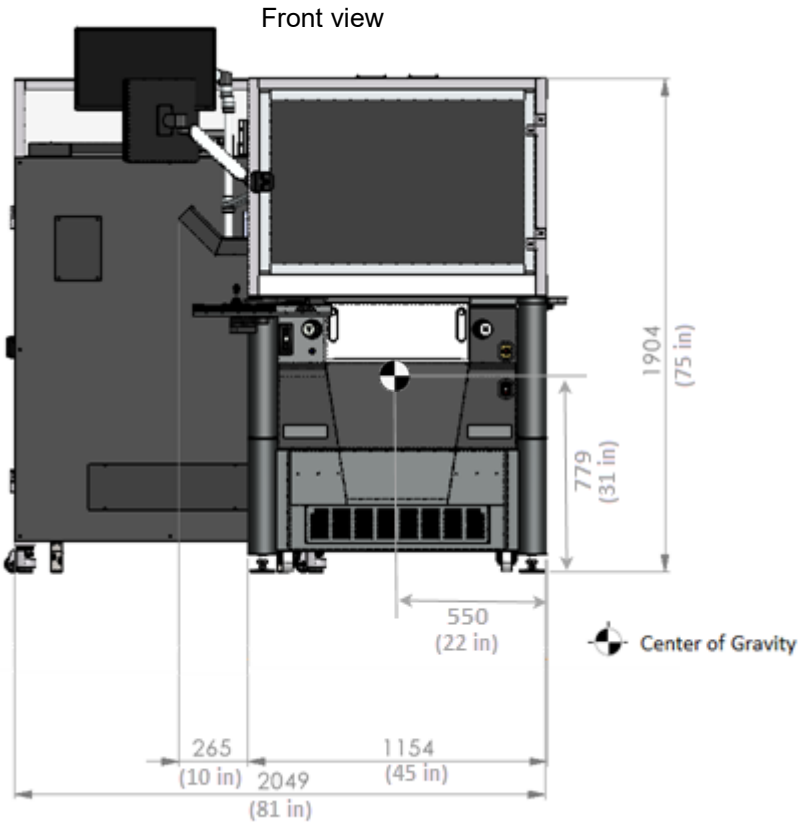
Dimensions (shown in mm [in.])

NOTE

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

Semi-automated Probe Station without MHU

Front view



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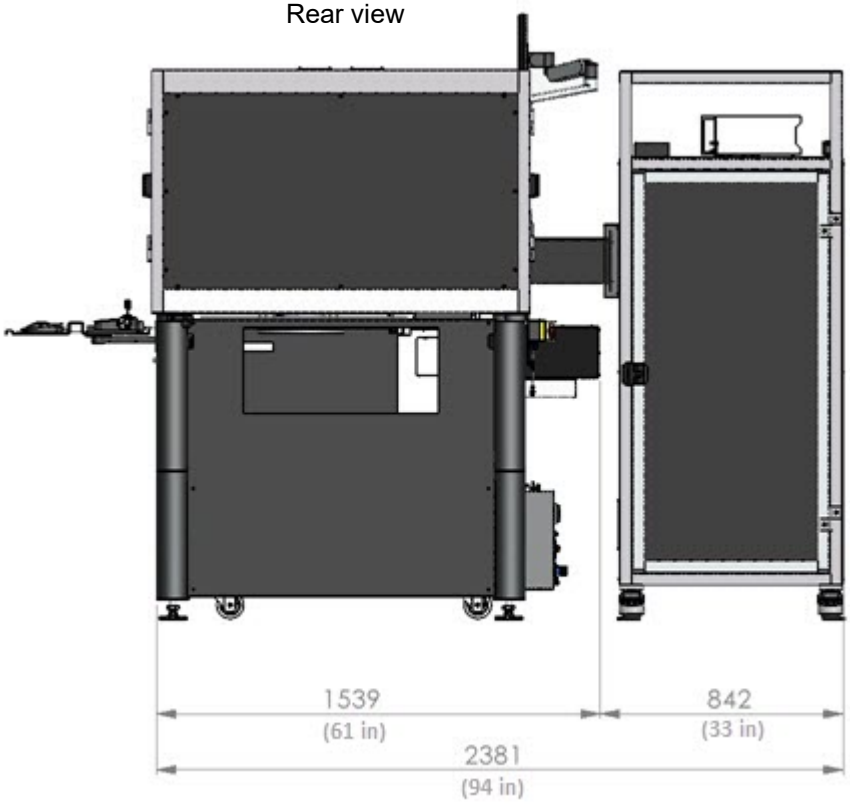
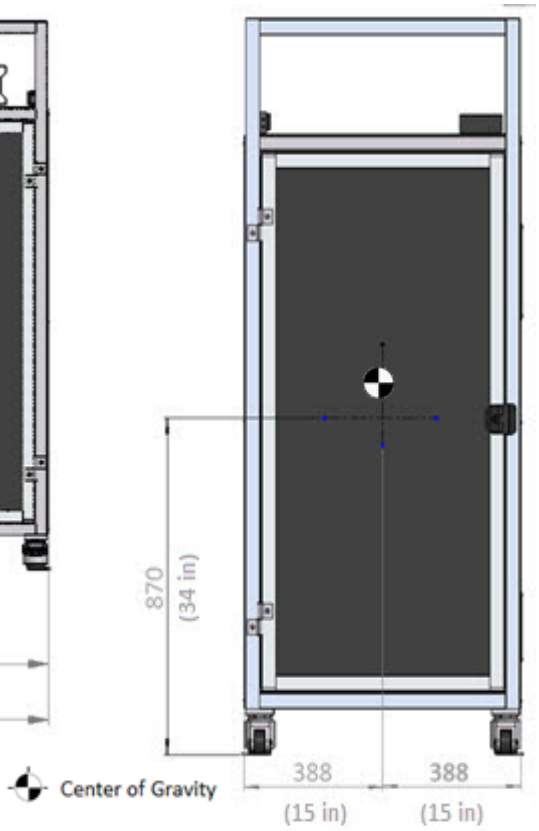
Rear view



Side view
(RACK-SIPH-LS)



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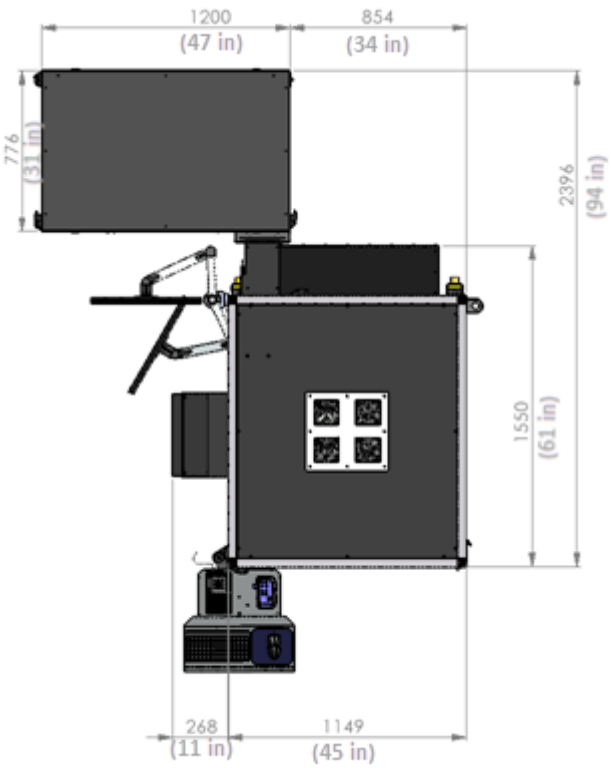
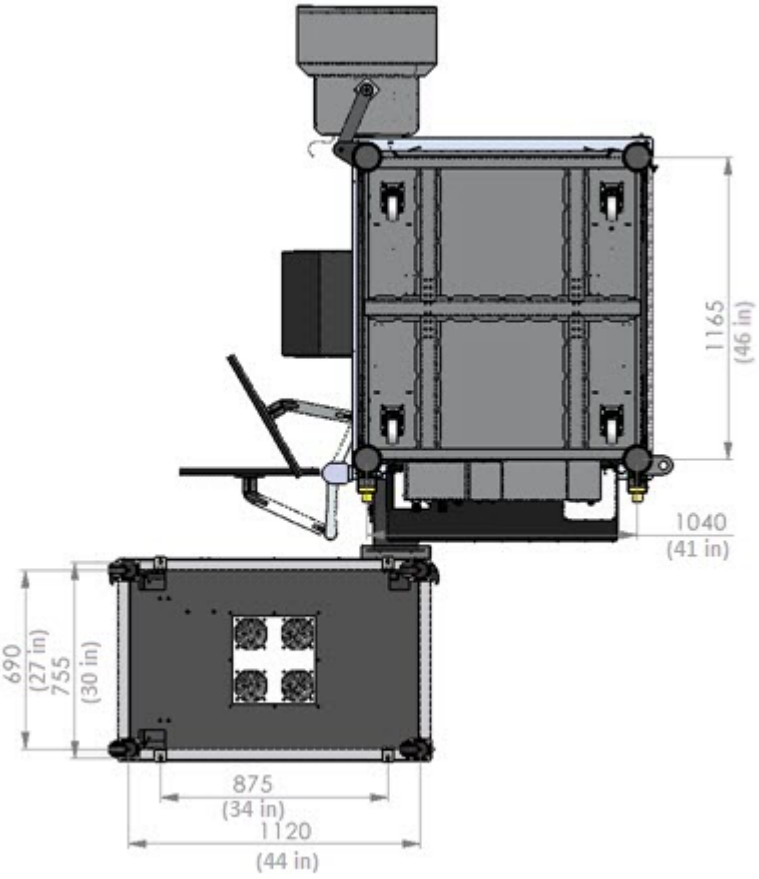
Top view



Bottom view



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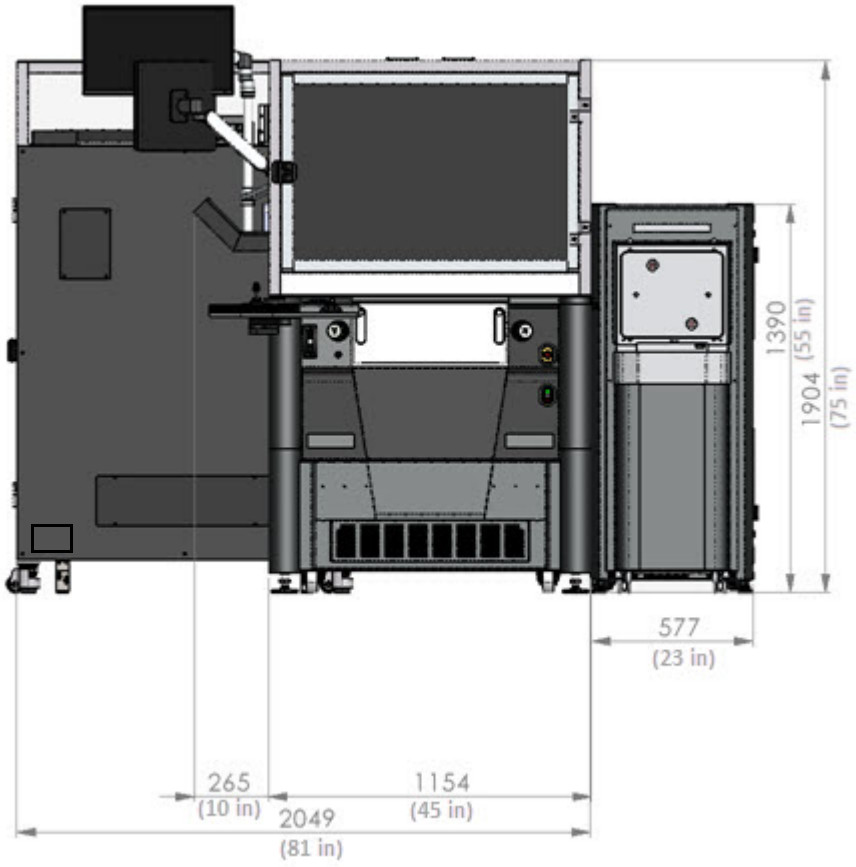
Fully-Automated Probe Station with MHU301

Front view



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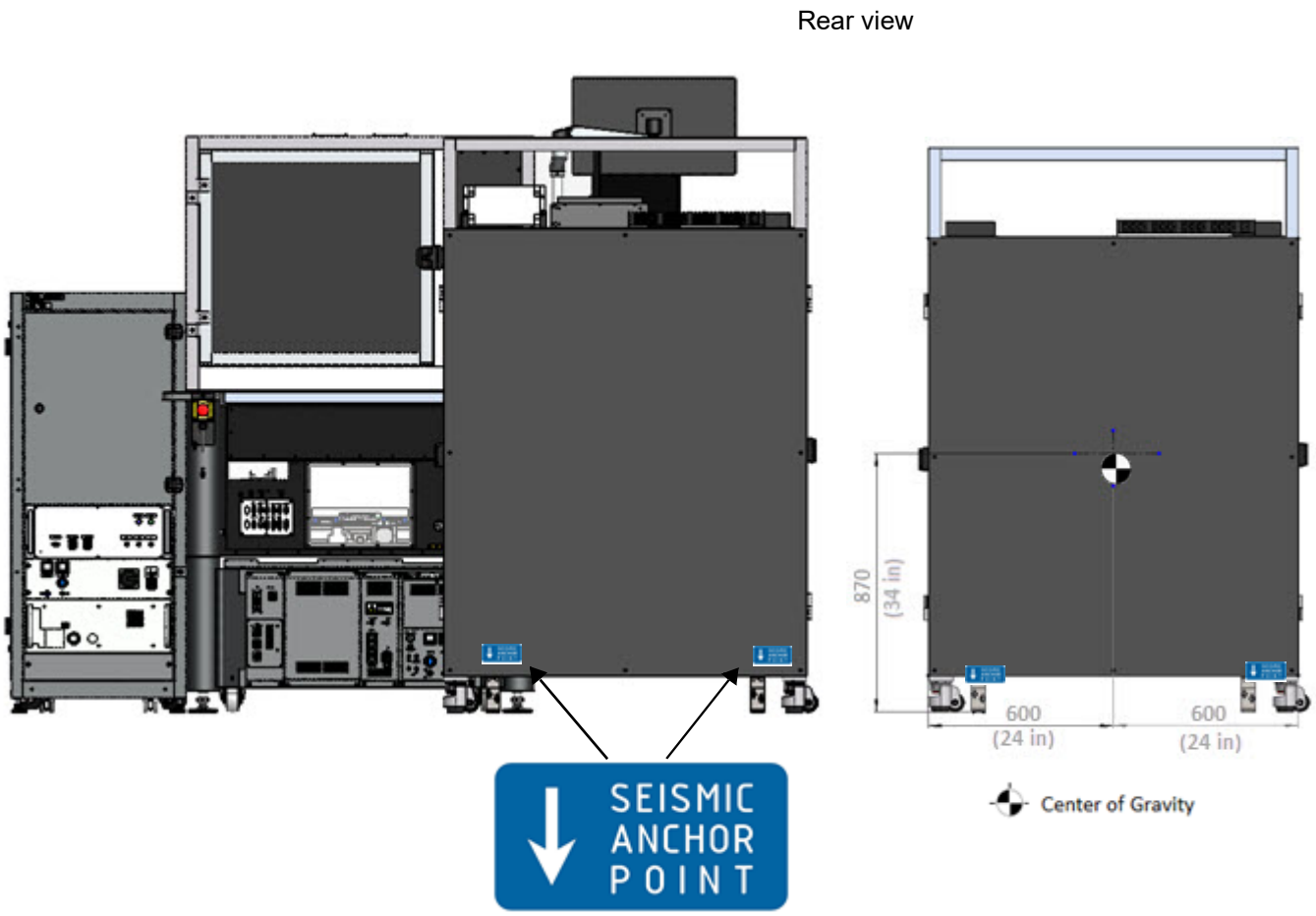

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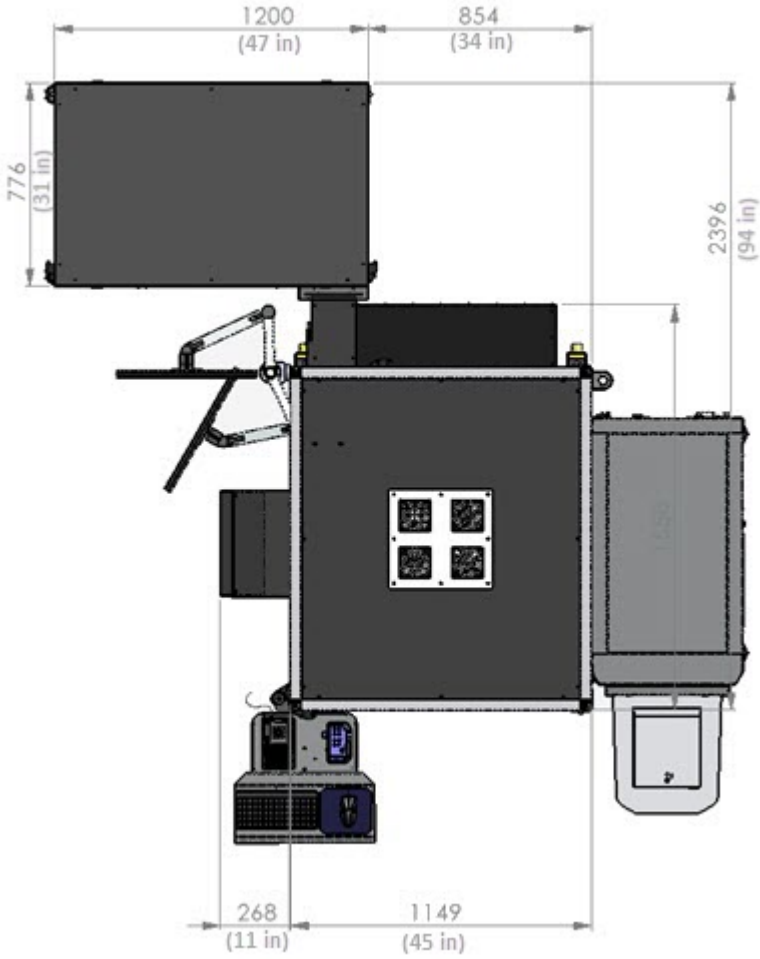
Top view



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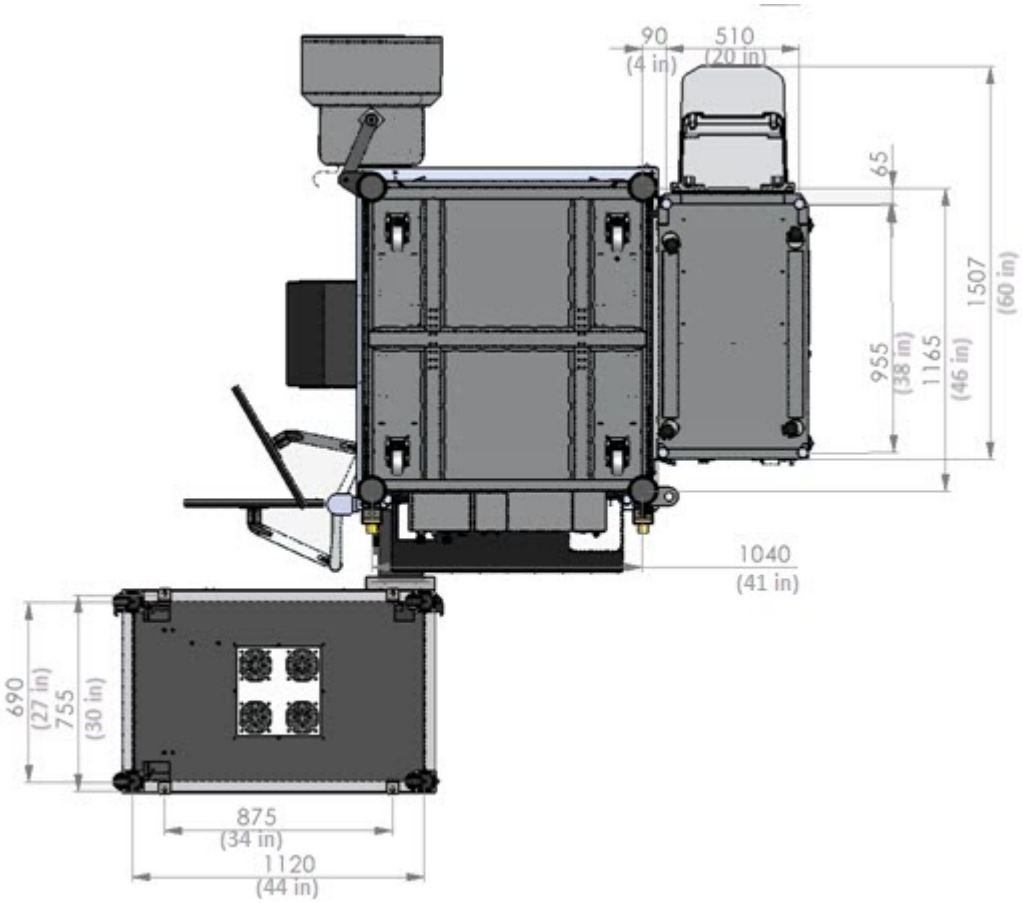
Bottom view



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