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

<table>
<thead>
<tr>
<th>Clean Dry Air (CDA)</th>
<th>General use</th>
</tr>
</thead>
<tbody>
<tr>
<td>• ISO 8573.1 Class 1.4.1 (3°C dew point, oil less than 0.01 mg/m³)</td>
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<tr>
<td>• 110 l/min (3.9 CFM) at SATP* supplied at 6-8 bar (87 - 116 psi) gage</td>
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<tr>
<td>• 8 mm OD push-in tube connection (3 m max tube length)</td>
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<table>
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<tr>
<th>MicroChamber probing environment</th>
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<tbody>
<tr>
<td>• ISO 8573.1 Class 1.1.1 (-70°C dew point, oil less than 0.01 mg/m³)</td>
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<tr>
<td>• Max flow: quick purge up to 280 l/min (9.9 CFM) at SATP* supplied at 6-8 bar (87 - 116 psi) gage</td>
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<tr>
<td>• Continuous flow: 57-85 l/min (2-3 CFM) at SATP* supplied at 6-8 bar (87 - 116 psi) gage</td>
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<td>• 8 mm OD push-in tube connection (3 m max tube length)</td>
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<tr>
<th>MicroChamber probing environment and general use CDA</th>
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<tr>
<td>• ISO 8573.1 Class 1.1.1 (-70°C dew point, oil less than 0.01 mg/m³)</td>
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<tr>
<td>• 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</td>
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<tr>
<td>• Continuous flow: 57-85 l/min (2-3 CFM) at SATP* supplied at 6-8 bar (87 - 116 psi) gage</td>
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<td>• 8 mm OD push-in tube connection (3 m max tube length)</td>
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<tr>
<td>• Chamber atmospheric pressure dew point:</td>
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<tr>
<td>• Thermal system operated down to +20°C: ≤ -45°C at SATP* (-29°C at 5 bar [73 psi] gage)</td>
</tr>
<tr>
<td>• Thermal system operated down to -40°C: ≤ -50°C at SATP* (-35°C at 5 bar [73 psi] gage)</td>
</tr>
<tr>
<td>• Thermal system operated down to -60°C: ≤ -70°C at SATP* (-57°C at 5 bar [73 psi] gage)</td>
</tr>
</tbody>
</table>
| CDA for general use may be supplied by the MicroChamber supply for a single service supply.

**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.

**NOTE**

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.
## Cascade TESLA200

### Vacuum
- **Wafer hold on chuck and positioners:**
  - *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):**
  - Vacuum pressure stability: ± 10 mbar (0.3 inHg)

### Power
#### Fully-automated probe station
- (Includes station controller, monitors, eVue microscope, wafer handler, 2 load ports)
  - **Single phase:** 100-240 V ±10%, 50/60 Hz
  - **Maximum 500 VA**
  - **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:**
    - Minimum 15A

#### Semi-automated probe station
- (Includes station controller, monitors, eVue microscope)
  - **Single phase:** 100-240 V ±10%, 50/60 Hz
  - **Maximum 500 VA**
  - **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:**
    - Minimum 15A
  - **Separate ground connection (PE):**
    - 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
- **I (IEC 61140)**

### Transient overvoltage
- **Overvoltage category II (IEC 60364-4-443)**

### Circuit breaker
- **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.

**NOTE**

Optional seismic restraints are available for ATT thermal systems which include a chiller.
## Cascade TESLA200

| Environmental Conditions | Operating | • Indoors only  
| | | • Altitude up to 1000 m  
| | | • Main supply voltage fluctuations not to exceed ± 10% of the nominal voltage  
| Temperature | • +17°C to +23°C  
| Relative humidity | • 20% to 60%  
| Ambient vibration (including floor) | 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:  
| | • 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 | • 0-4 SCFM air flow with quick purge bypass (standard on TESLA200-xx-AP and TESLA200-xx-M MicroChamber stations)  
| Dimensions | Station | • See Fully-automated System on page 5.  
| Clearance | Front | • 900 mm (36 in.) during installation or service  
| | Back | • 800 mm (32 in.) during installation or service  
| | Left/right | • 800 mm (32 in.) during installation or service  
| | Top | • 400 mm (16 in.)  
| Additional clearance may be required for thermal system cooling units.  
| Weight | Probe station | • Fully automated: ~728 kg (1604 pounds)  
| | | • Semi-automated: ~520 kg (1146 pounds)  
| Lifting requirements | To avoid personal injury and/or damage to the station while moving the station from the crate to the floor, use one of these methods:  
| | | • Use a forklift with a minimum 1150-pound/1600-pound capacity.  
| | | • Roll the station down the integrated crate ramp on its wheels. A minimum of four to six people will be required.  
| | Once on the floor, the machine can be rolled into place on its wheels.  
| Shipping Dimensions (WxDxH) | Station and vibration isolation table | • 1163 x 1722 x 1540 mm (46 x 68 x 61in.)  
| Shipping Weight | Probe station crate | • Fully automated: ~929 kg (2048 pounds)  
| | | • Semi-automated: ~721 kg (1590 pounds)  

* Standard Ambient Temperature And Pressure (SATP)
Cascade TESLA200

Dimensions (mm [in.])

Semi-automated System
Cascade TESLA200

Fully-automated System

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