

**1100°C 7.6 Liter Vacuum Chamber Furnace with feedthrough flange - VBF-1200X-H8**





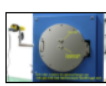









Page | 1



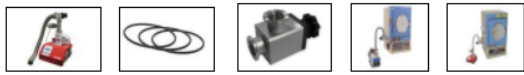




Mehraan





VBF-1200X-H8 is a UL/CSA standard vacuum furnace. It equips a 7.5" ID x 13.4" L Quartz tube chamber sitting horizontally. Water-cooled stainless steel vacuum flanges with valves are installed to achieve a vacuum of  $10^{-2}$  to  $10^{-5}$  Torr through a mechanical or molecular vacuum pump. It is designed for calcining or annealing semiconductor wafers (up to 6") under vacuum or various other gas atmospheres with a temperature up to 1100°C. It also can also be used as vacuum brazing furnace for fusing small parts.

## SPECIFICATIONS:

Power	3 KW max.
Voltage	Single phase 208 - 240 VAC / 50/60Hz, (25 A breaker installed) Note: Power cable included, but without the plug. Please install a plug by your own or click link below picture to choose a plug according to your country or your lab requirement 
Working Temperature	<ul style="list-style-type: none"> <li>• <math>\leq 1000^{\circ}\text{C}</math> continuously</li> <li>• Max. <math>1100^{\circ}\text{C}</math>, &lt; 30 minutes</li> <li>• Temperature Uniformity: <math>\pm 2^{\circ}\text{C}</math></li> </ul>
Heating Rate	<ul style="list-style-type: none"> <li>• Max. <math>20^{\circ}\text{C}/\text{min}</math></li> <li>• Recommended. <math>10^{\circ}\text{C}/\text{min}</math></li> </ul>
Heating Elements	High-quality Ni-Cr-Al resistance wire as heating elements and can be heated up to $1200^{\circ}\text{C}$ .
Quartz Tube Size & Effective Heating Area 	<ul style="list-style-type: none"> <li>• Tube size: 8" O.D. x 7.5" I.D x 13.4" L.</li> <li>• Heating area: 7.5" ID x 8.5" Depth (7.6Liter)</li> <li>• Uniform Temperature zone: 4"Dia x 3.5" depth in center position within <math>\pm 5^{\circ}\text{C}</math></li> <li>• Quartz tube is replaceable ( click picture left to order spare tube )</li> </ul>
Vacuum Flange (with dual 1/4" feedthrough ports)  <i>Note: The standard flange door has upgraded to feedthrough type on Feb 15, 2016.</i>	<ul style="list-style-type: none"> <li>• Stainless steel vacuum flange with dual high-temperature silicone O-rings at the front door. <ul style="list-style-type: none"> <li>• One 1/4 gas inlet which allows continuous gas delivery during operation. A gas quartz tube (6.35mm O.D) is provided to reach the location of the sample and deliver reactive gas to sample directly. (Fig A, B)</li> <li>• One 1/4 thermocouple feedthrough port allows a 1/4 O.D thermocouple probe to be inserted into the chamber and measure temperature of the sample independently. (Fig. C) (Thermocouple is optional. Click <a href="#">here</a> to find one). Four probes electric resistance measurement feedthrough also is available upon request. (Fig. D)</li> <li>• M15 x 1.5mm Thread for both 1/4" feedthrough</li> <li>• One bored Al<sub>2</sub>O<sub>3</sub> foam refractory block (190Dia * 50mm) is provided. (Fig. F)</li> </ul> </li> <li>• K type 1/4" OD x 18" L thermocouple is included. (Since Apr 2016) (Fig. C)</li> <li>• Gas Inlet Tube (O.D 6.35mm, I.D 4.0 mm, L 300mm) is included. (Since Apr 2016)</li> </ul> <div>      </div> <div> Fig. A      Fig. B      Fig. C      Fig. D      Fig. F </div>
Optionals	<ul style="list-style-type: none"> <li>• Sample holder is not provided with the furnace. You may check the link below to order the sample holder separately.</li> <li>• Optional Quartz Thermal Block is available upon request as the refractory block, quartz block can help achieve higher vacuum level and avoid potential contamination problems, please order <a href="#">Quartz Thermal Block</a>.</li> <li>• Optional 4 wires ( Pt ) feedthrough is available upon request for electrical properties measurement at the high temperature at extra cost.</li> </ul> <div>     </div> <div> <a href="#">Flat sample holder</a>    <a href="#">Crucible sample holder</a>    <a href="#">Quartz Thermal Block</a>    <a href="#">4 wires feedthrough</a> </div>
Gas Inlet and Outlet 	<ul style="list-style-type: none"> <li>• One gas purging inlet (1/4" hose adapter ) with a valve is on the left side of the furnace (click the pic in left).</li> <li>• The inert gas can be introduced into the chamber via the inlet for purging purpose.</li> <li>• If a continuous gas flow is needed, refer to the <i>additional gas inlet and thermocouple probe</i> below.</li> </ul> <p>(Attention: MTI does not recommend using its products under hazardous conditions. We will not be liable for any damages incurred under hazardous conditions. Tube furnaces with quartz tubes are designed for use under vacuum condition and at low-pressure levels &lt; 0.2 bars ( 3 PSI ).)</p>

Water Cooling	<p>A water cooling jacket has been built inside the flange to protect the vacuum sealing assembly from melting at over 300°C. The inlet and outlet ports located on the left side of the furnace are used for connecting to a water chiller through two 12 mm Dia. polyurethane tubes (water chiller is sold separately). <a href="#">Please click the picture below left to order the water chiller.</a></p> 
Pressure Measurement / Monitoring	<ul style="list-style-type: none"> <li>• <b>Mechanical Vacuum Gauge</b> (included as standard accessory), which ranges from -0.1 to 0.15Mpa.</li> <li>• <b>Digital Pressure Gauge</b> (optional) A gas-type independent (above 10mbar) digital vacuum gauge with a wide range between <math>3.8 \times 10^{-5}</math> to 1125 Torr. Aside from greater measurement precision, this gauge reduces risks of chamber explosions caused by the incorrect reading of gas pressures due to gas-type dependency.</li> </ul> 
Vacuum Pressure	<ul style="list-style-type: none"> <li>• Vacuum Level is dependent on the vacuum pump used, connected pipe, interior refractory block's materials etc. By using KFD25, stainless steel pipe, MTI's two stage mechanical pump and KF25 Ball valve, the furnace can achieve vacuum levels below: <ul style="list-style-type: none"> <li>◦ 10 mtorr (<math>10^{-2}</math> torr) via mechanical pump within 30 minutes without Thermal Block</li> <li>◦ 60 mtorr (<math>6 \times 10^{-2}</math> Torr) via mechanical pump within 30 minutes with the Quartz Thermal Block at 900C</li> </ul> </li> <li>• Optional: <ul style="list-style-type: none"> <li>◦ Vacuum pump and pipe are not included, please click on BOLD or picture on the optional part below to order.</li> <li>◦ For achieving a higher vacuum level, a <b>Turbomolecular Vacuum Pump Station</b> is necessary. ( click bottom left picture to see detailed specs )</li> <li>◦ Spare sealing O-ring is available at extra cost ( click 2nd picture to left below )</li> <li>◦ <b>KF25 Right-Angle Valve</b> for quick connection to KF25 Bellows (click the 3rd picture at left below ).</li> </ul> </li> </ul> 
Temperature Controller	 <ul style="list-style-type: none"> <li>• <b>FA-YD518P-AG</b> temperature controller is included.</li> <li>• Proportional–integral–derivative control (PID control) and auto-tune function</li> <li>• 30 segments programmed with ramping, cooling and dwelling steps</li> <li>• Built-in over-temperature alarm and thermocouple failure alarm</li> <li>• +/- 1 °C temperature control accuracy</li> <li>• Default DB9 PC communication port</li> <li>• MET Certified</li> </ul>
Temperature controller (optional)	 <ul style="list-style-type: none"> <li>• MTS02-Y Temperature control software kit (for YD518P series controllers) + 15" laptop package is available at the options bar. <a href="#">Click for the detail information about the MTS02-Y software kit.</a></li> <li>• You may upgrade the temperature controller to the <b>Eurotherm 3504 Temperature Controller</b> which is fully compatible with LabVIEW and provides +/- 1°C accuracy. This package includes a Eurotherm 3504 programmer, a communication cable (RS485 - USB) and a software CD. Click the pic below to view the full spec of Eurotherm 3504 temperature controller.</li> </ul>
Gas Mixing System (optional)	<p>You may choose a gas mixer to deliver multiple gasses with control over gas composition and flow rate (click pictures below to order separately).</p> 
Overall Dimensions	 <p>700mm(L) x 440mm(W) x 435mm(H)</p>
Net Weight	80 kg
Shipping Weight	200 lbs
Shipping Volume	45"(L) x 28"(W) x 35"(H)
Warranty	<ul style="list-style-type: none"> <li>• One year limited warranty with lifetime support (consumable parts such as processing tubes, and O-rings are not covered by the warranty, please order replacements at related products below.).</li> <li>• <b>ATTENTION: Any damages caused by the use of corrosive and acidic gasses are not under the coverage of MTI One Year Limited Warranty.</b></li> </ul>

<p>Compliance</p>	<ul style="list-style-type: none"> <li>• CE Certified</li> <li>• All electric components ( &gt;24V) are UL / MET / CSA certified</li> <li>• Patten Number : ZL-2011-2-0102249.4 SINCE 2011-5-19</li> <li>• The furnace is ready to pass TUV(UL61010) or CSA certification at extra cost. ( please click marks below to learn details</li> </ul> 
<p><b>Warning</b></p>  <p><a href="#">Click here to learn the installation of a gas regulator</a></p>	<ul style="list-style-type: none"> <li>• Tube furnaces with quartz tubes are designed for use under vacuum condition and at low-pressure levels &lt; 0.2 bars ( 3 PSI ).</li> <li>• <b>Attention:</b> A two-stage pressure regulator must be installed on the gas cylinder to limit the pressure to below 3 PSI for safe operation. <a href="#">Click here to learn the installation of a gas regulator.</a></li> <li>• Never heat the furnace while the gas release valve is closed and a positive pressure condition exists within the furnace chamber. The pressure gauge must be used to closely monitor the chamber condition at all times during the heating process; please open the gas release valve immediately once the chamber pressure has reached over 3 PSI to prevent unforeseeable damages.</li> <li>• A maximum temperature of 1000°C should be imposed on all quartz tube furnaces while running vacuum to ensure a safe operation. Temperatures beyond 1000°C could cause the quartz tubes to undergo deformations under vacuum.</li> <li>• The flow rate for gasses should be limited to &lt; 200 SCCM ( or 200ml/min ) for reducing thermal shocks to the tube ( with the output pressure of the gas tank regulated to &lt; 0.2 Bar or &lt; 3 PSI ).</li> </ul>

Mehrgan  
Parto  
Shar