Thermal Diffusivity Instruments
DLF-2 with EM-2800 and Power Cart

Site Preparation Guide
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Circulator  Power  Cooling  Gas  LN₂  Fluid  Light  Hardware  Software  Temp  Lab  Customer
IDEAL PLACEMENT

Select a location with adequate floor space and in a vibration-free environment.

8 feet (2.45 meters)
SPACE MEASUREMENTS

- **Height**: 74 in. (188 cm)
- **Depth**: 70 in. (188 cm)
- **Width**: 56 in. (142 cm)
**Components:**

A. **Computer**
B. **EM-2800 & DLF-2**
C. **Gas Cylinder (Argon)**
D. **Gas Cylinder (Air or nitrogen)**
E. **Vacuum Pump**
F. **Power Cart**
Instrument Measurements

EM-2800 MEASUREMENTS

- Weight: 202 kg (445 lbs)
- Height, head raised: 62 in. (158 cm)
- Height, head closed: 50 in. (127 cm)
- Width: 30 in. (76 cm)
- Depth: 21 in. (53 cm)
Instrument Measurements

DLF-2 MEASUREMENTS

Weight: 71 kg (156 lbs)

36 in. (91 cm) (height)

17 in. (43 cm) (width)

17 in. (43 cm) (depth)
Instrument Measurements

POWER CART MEASUREMENTS

- Weight: 193 kg (426 lbs)
- 26 in. (66 cm) (height)
- 32 in. (81 cm) (width)
- 23 in. (58 cm) (depth)
- 3 ft. (91 cm) min. (distance from the back wall)
Utility Requirements

**POWER**

**System supply voltage:** 200–240 VAC (rated for 15 A) 50 or 60 Hz

**Furnace supply voltage:** 200-240 VAC (rated for 80 A) 50 or 60 Hz

*Distinct voltages 200, 208, 220 & 240 VAC need to be configured on the furnace transformer during installation.*

The conduit on the back of the power cart must be connected to a dedicated utility panel with a dedicated, easily accessible main power disconnect switch.

**Vacuum**

120V (US) or 220–240V, 6.4A max, 50/60 Hz

**Power cords provided**

- DLF-2, EM-2800, computer and monitor power cables are provided with the instrument and plugged into the back of the power cart.
- The vacuum pump power cable is provided with the pump.

**Use power cords with plugs appropriate for your circuit.**

Connect the DLF-2, EM-1600, computer, and monitor to outlets on the back of the Power Cart and make sure that the mains assigned do not also supply power to noise generating equipment nearby, such as welders, motors, transformers, etc.

Supply voltages lower than indicated may result in a degradation of performance.

An independent heavy GROUND wire must be provided through the power hookup. Improper grounding may cause severe damage for which the supplier will not accept responsibility. All power strips must be fully grounded and carry the ground through to the sockets into which the computer is plugged.

**Transformer Connections Table**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>To</th>
<th>Terminal</th>
<th>Primary Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>&gt;</td>
<td>H5</td>
<td>240V</td>
</tr>
<tr>
<td>H2</td>
<td>&gt;</td>
<td>H5</td>
<td>220V</td>
</tr>
<tr>
<td>H2</td>
<td>&gt;</td>
<td>H4</td>
<td>208V</td>
</tr>
<tr>
<td>H2</td>
<td>&gt;</td>
<td>H3</td>
<td>200V</td>
</tr>
</tbody>
</table>
## Utility Requirements

### GAS

#### Furnace Purge Gas Requirements

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Must be dry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Must be argon</td>
</tr>
</tbody>
</table>
| Inlet Pressure | Minimum: 45 psig (3.10 bar)  
                             Maximum: 50 psig (3.45 bar) |
| Source       | Must be from a **gas cylinder, Grade 5 purity** |
| Port         | 1\(^{st}\) port on the back with 1/8” diameter push-to-connect fitting |

#### Pneumatic Gas Requirements

| Inert Gas       | Required  
                  Argon from the gas cylinder can be used  
                  Dry air or nitrogen from a cylinder or house supply |
| Ports           | 2\(^{nd}\) port on the back with 1/8” diameter push-to-connect fitting |

### 1/8” Urethane tubing

- Supplied with the instrument  
- Rated to 100 psig (7 bar)  
- 4.5 m (15 ft) length of tubing connects to the furnace by threaded barb connection (supplied).  
- A push-to-connect (Legris) 1/8” to 1/8” tubing connector is provided: ![Connector](image)  
- A push-to-connect (Legris) 1/8” stem to ¼” tubing adapter is provided: ![Adapter](image)

### 1L/day of Liquid Nitrogen

- Use a small handheld Dewar flask to manually pour into the detector Dewar. A funnel is supplied for assistance.  
- ![Funnel](image)

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Improperly regulated, pulsating, or poor-quality purge gas may cause irregular or erratic instrument operation.  
Containment of exhaust is recommended if noxious or poisonous gases are released by sample when heated.  
Venting inert gases into small rooms may reduce the oxygen content of the air and become hazardous to personnel.
**Utility Requirements**

### WATER

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling Capacity</td>
<td>• 10 kW at 25°C return to the instrument</td>
</tr>
<tr>
<td>Recirculation</td>
<td>• If plant-wide recirculation is used, a minimum inlet/outlet differential pressure of 50 psig (3 bar) is required.</td>
</tr>
<tr>
<td>Flow Rate</td>
<td>• Minimum 5.7 L/min (1.5 gal/min)</td>
</tr>
<tr>
<td></td>
<td>• Inlet pressure: Maximum 80 psig (5.5 bar)</td>
</tr>
<tr>
<td>Water Temperature</td>
<td>• Optimal: <strong>20°C</strong></td>
</tr>
<tr>
<td></td>
<td>• Permissible: 15°C–30°C</td>
</tr>
<tr>
<td></td>
<td>• Excessively cold water will result in “sweating” and corrosion of cooled metal surfaces. Warm water may not allow you to start a test from below 25°C.</td>
</tr>
<tr>
<td>Chiller/Circulator</td>
<td>• If a chiller/circulator is being used, it must be placed at the same level as the instrument. A connection to city water as a backup in case of lost power is required.</td>
</tr>
<tr>
<td></td>
<td>• Wall-mounted supply shutoff, open drain, and city water are required if a chiller/circulator is <strong>not</strong> used.</td>
</tr>
</tbody>
</table>

The instrument is supplied with three hoses (1.8 meters/6 feet each) to connect to the Coolant Inlet and Outlet ports on the back of the Power Cart. The other end of each hose must be connected to the coolant source.

The coolant source must have a shutoff valve.
## HARDWARE REQUIREMENTS

<table>
<thead>
<tr>
<th>Item</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB Ports</td>
<td>3 unused USB ports</td>
</tr>
<tr>
<td>Serial Ports</td>
<td>Unused RS-232 port</td>
</tr>
</tbody>
</table>

Computers should not be connected to any other analytical instruments or LAN.

Instrument drivers and software are provided on CD.

## SOFTWARE REQUIREMENTS

<table>
<thead>
<tr>
<th>Item</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>• Windows 7 or 10, 32- or 64-bit, Ultimate, Enterprise &amp; Professional</td>
</tr>
<tr>
<td></td>
<td>• Home version not supported</td>
</tr>
<tr>
<td>Network</td>
<td>• TA Instruments is not responsible for resolving issues associated with connections to your corporate network.</td>
</tr>
<tr>
<td></td>
<td>• Network cards and/or certain network operation frequently interfere with the operation of the instrument and software.</td>
</tr>
<tr>
<td>Conflicts</td>
<td>TA Instruments is not responsible for resolving hardware/software conflicts created by the addition of third party hardware or software to the computer.</td>
</tr>
<tr>
<td>Facility Requirements</td>
<td>Details</td>
</tr>
<tr>
<td>------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Sufficient lab space for instrument, computer, vacuum pump, | Width: 168 cm (5.5 ft)  
Depth: 230 cm (7.5 ft)  
Height: 188 cm (6 ft) |
| and recirculator (if needed):                               |                                                                        |
| Furnace power is 200–240 VAC, 80 A max, 50/60 Hz          |                                                                        |
| System power is 220–240 V, 15 A max, 50/60 Hz             |                                                                        |
| Vacuum power is 120 V (USA) or 220–240 V 6.4 A max, 50/60 Hz |                                                                        |
| Purge Gas – Dry argon                                      | Grade 5 purity cylinder  
Regulator to allow 45–50 psig (3.10–5.50 bar) |
| Pneumatic Gas – Dry air; Argon or nitrogen                 | Tank  
House supply  
Regulator to allow 45–50 psig (3.10–5.50 bar) |
| Liquid Nitrogen                                            | Handheld dewar, 1 L/day usage |
| Water Circulation                                          | Nominal flow rate of 1.5 gal/min  
Optimal coolant temperature of 20°C  
Filtered or clean and debris-free |
| The Customer assumes responsibility for any damage that    | occurs when the instrument is moved by someone other than a trained TA |
| instrument is moved by someone other than a trained TA     | Instruments Service Representative.                                    |

I hereby acknowledge that all utility requirements have been met per the checklist above and that they will be ready at the agreed time of installation.

**If all utility requirements are not met at the agreed time of installation, additional charges may be incurred for a return Service trip.**

__Customer__

DD 
MM 
YYYY

__Company__

City 
State 
Country

Please send a signed copy of the completed checklist to your local Service representative.
For information on our latest products, contact information, and more, see our website at: http://www.tainstruments.com.

To find your local TA Instruments office and contact information, visit http://www.tainstruments.com/contact/ta-directory/

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