

Thermal Diffusivity Instruments

DLF-2 with EM-1600



Site Preparation Guide

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Circulator



Power



Cooling



Gas



LN₂



Fluid



Light



Hardware



Software



Temp



Lab



Customer

Ideal Setup



IDEAL PLACEMENT AND BENCH MEASUREMENTS

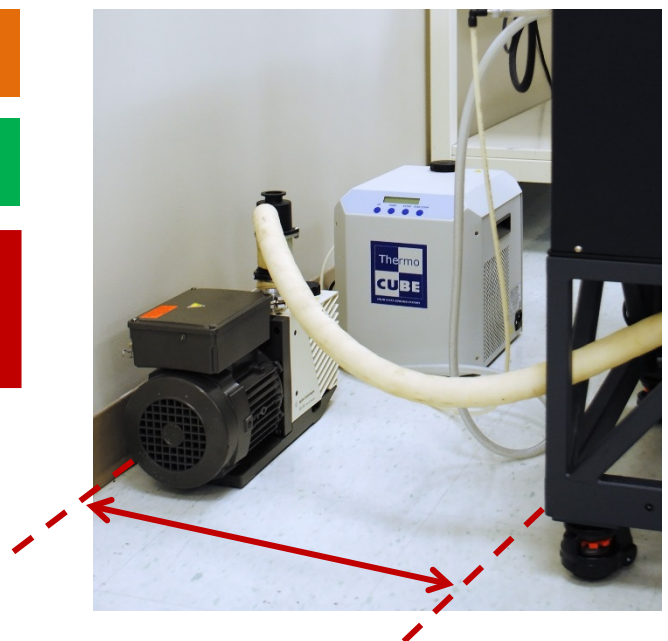
Select a location with adequate floor space and a rigid laboratory bench that is level and is in a vibration-free environment.



Floor + bench width: 2.10 m (7 ft)

Bench depth: 90 cm (36 in)

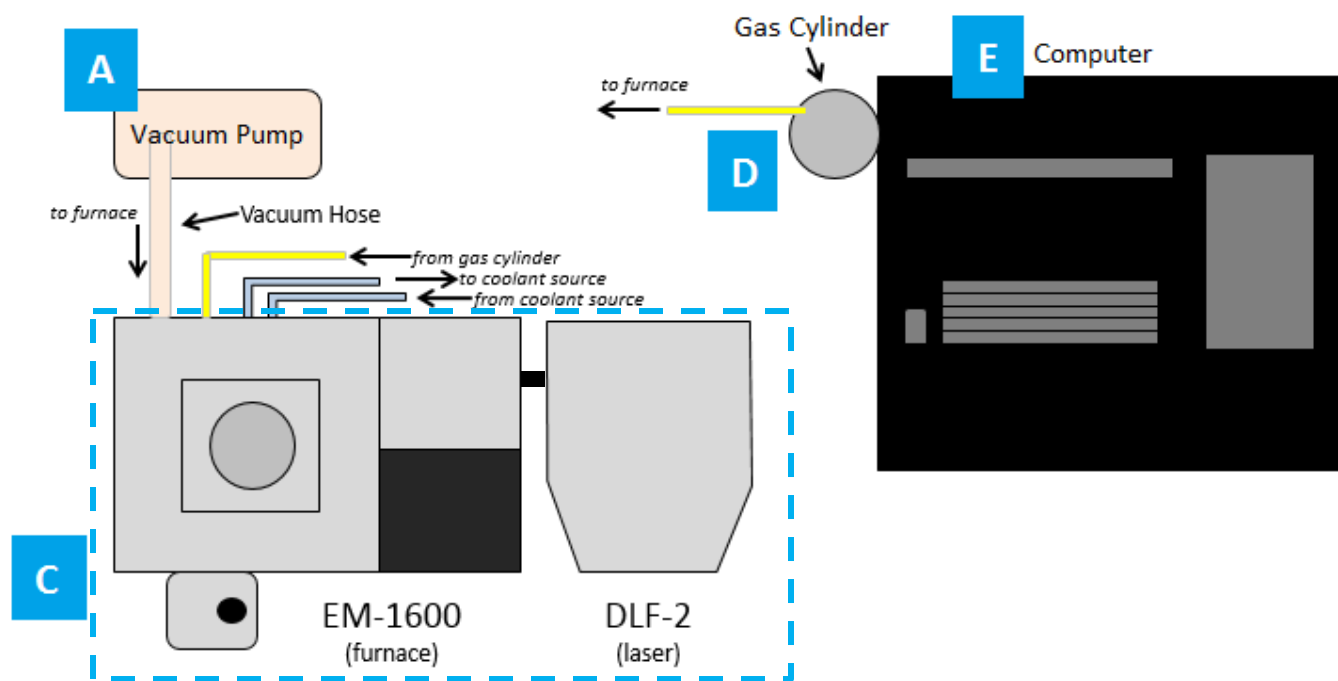
Floor space behind the instrument:
120 cm (48 in)



Ideal Setup and Components



IDEAL PLACEMENT—TOP VIEW



COMPONENTS

- A. Vacuum Pump
- B. Chiller/Recirculator (not shown)
- C. Instrument (Furnace + Laser)
- D. Bottled Gas
- E. Computer (Controller)

Instrument Measurements



EM-1600 MEASUREMENTS



Height (Head CLOSED): 114 cm (45 in)

Height (Head OPEN): 144 cm (57 in)

Width: 63 cm (25 in)

Depth: 53 cm (21 in)

Weight: 124 kg (274 lbs)

Instrument Measurements



DLF-2 MEASUREMENTS



Height: 90 cm (36 in)

Width: 43 cm (17 in)



Depth: 43 cm (17 in)

Weight: 71 kg (156 lbs)

Utility Requirements



POWER

Item	Requirement
Instrument	<ul style="list-style-type: none"> 200–240 VAC, 15 A max (Furnace: 12A, Laser: 3A), 50/60 Hz Single phase
Computer and Vacuum	120V (US) or 220–240V, 6.4A max, 50/60 Hz
Power cords provided	<ul style="list-style-type: none"> DLF-2: NEMA 6-15 plug, 2.4 m (7.5 ft) long Rated for 10A, 250 VAC EM-1600: NEMA 6–15 plug, 2.5 m (8 ft) long Rated for 15A, 250 VAC
	<ul style="list-style-type: none"> Computer: Monitor: Vacuum pump: <p>} NEMA 5-15 plug, 2 m (6.5 ft) long</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>NEMA 6-15 plug</p> </div> <div style="text-align: center;">  <p>NEMA 5-15</p> </div> </div>



Use power cords with plugs appropriate for your circuit.



Connect the DLF-2, EM-1600, computer, and monitor to wall outlets on the same circuit 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.



Ensure that the mains assigned do not also supply power to noise generating equipment nearby, such as motors, welders, transformers, etc.



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.

Utility Requirements



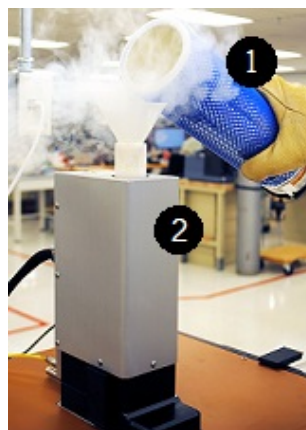
GAS

Item	Requirement
Conditions	Must be dry
Type	Must be nitrogen or argon
Source	Must be from a gas cylinder, Grade 5 purity
Inlet Pressure	Minimum: 45 psig (3.10 bar) Maximum: 50 psig (3.45 bar)





Liquid Nitrogen

- 1 L per day usage
- Use a small handheld dewar flask **1** to manually pour into the detector dewar **2**. A funnel **3** is supplied for assistance.



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: 
- A push-to-connect (Legris) 1/8" stem to 1/4" tubing adapter is provided: 



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

Item	Requirement
Cooling Capacity	<ul style="list-style-type: none"> 300W at 25°C
Recirculation	<ul style="list-style-type: none"> If plant-wide recirculation is used, a minimum inlet/outlet differential pressure of 50 psig (3.45 bar) is required ThermoCube chiller (PN 201786.001) is strongly recommended
Nominal Flow Rate	<ul style="list-style-type: none"> 1–2 L/min Varies with Inlet pressure
Water Temperature	<ul style="list-style-type: none"> Optimal: 25°C Permissible: 15°C–30°C Excessively cold water will result in “sweating” and corrosion of cooled metal surfaces. Warm water may not allow sufficient cooling of critical instrument components.



Coolant Inlet and Outlet hoses

The instrument is supplied with two hoses (1.8 meters/6 feet each) to connect to the Coolant Inlet and Outlet ports on the back of the furnace. The other end of each hose has a **male ¼” fitting** that must be connected to the coolant source.



¼” male fittings



Wall-mounted supply shutoff, open drain, and city water is required if chiller/circulator was NOT ordered.

Computer Requirements



HARDWARE REQUIREMENTS

The instrument comes with a computer already configured. Use the following requirements if using a computer not supplied by TA Instruments:

- Unused RS-232 (serial) port
- Unused USB port



Instrument drivers and software are provided on a CD.



Computer should not be attached to other analytical instruments or LAN.



SOFTWARE REQUIREMENTS

Item	Requirement
Operating System	<ul style="list-style-type: none">• Windows 7 or 10, 32- or 64-bit, Ultimate, Enterprise & Professional• Home version not supported
Network	<ul style="list-style-type: none">• <i>TA Instruments is not responsible for resolving issues associated with connections to your corporate network.</i>• <i>Network cards and/or certain network operation frequently interfere with the operation of the instrument and software.</i>
Conflicts	<i>TA Instruments is not responsible for resolving hardware/software conflicts created by the addition of third party hardware or software to the computer.</i>

Site Preparation Checklist



Thermal Diffusivity Instruments: DLF-2 with EM-1600

	<p>Sufficient bench space for instrument, computer, vacuum pump, and recirculator (if needed):</p> <ul style="list-style-type: none"> <input type="checkbox"/> Width: 2.10 m (7 ft) <input type="checkbox"/> Depth: 90 cm (36 in)
	<ul style="list-style-type: none"> <input type="checkbox"/> Instrument power is 200–240 VAC, 15 A max, 50/60 Hz <input type="checkbox"/> Computer, monitor, and vacuum power is 120 V (US) or 220–240 V, 6.4 A max, 50/60 Hz
	<p>Purge Gas – Dry nitrogen or argon</p> <ul style="list-style-type: none"> <input type="checkbox"/> Grade 5 purity cylinder <input type="checkbox"/> Regulator to allow 45–50 psig (3.10–5.50 bar) <p>Liquid Nitrogen</p> <ul style="list-style-type: none"> <input type="checkbox"/> Handheld dewar, 1 L/day usage
	<p>Water Circulation</p> <ul style="list-style-type: none"> <input type="checkbox"/> Nominal flow rate of 1–2 L/minute <input type="checkbox"/> Optimal coolant temperature of 25°C <input type="checkbox"/> Filtered or clean and debris-free <input type="checkbox"/> ThermoCube chiller OR wall-mounted supply shutoff, open drain, and city water
	<ul style="list-style-type: none"> <input type="checkbox"/> The Customer assumes responsibility for any damage that occurs when the 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.

TA Instruments Offices

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<http://www.tainstruments.com>.

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