



TA Instruments Installation Requirements for Thermal Expansion Systems

Notice

Thank you for ordering a thermal expansion system from TA Instruments. To ensure that installation of your system goes as smoothly as possible and has you ready to start evaluating your sample materials as quickly as possible, we are providing the attached installation information. It includes details regarding laboratory space, power, and auxiliary requirements, as well as configuration requirements for the controller (computer). Please review this information carefully and take any appropriate actions prior to the installation date. To avoid unnecessary delays, and/or additional charges, please ensure that the requirements specified in this document are met before your TA Instruments Service Representative arrives. Contact your local TA Instruments Representative if you have any questions.



To arrange for installation of your system, contact our U.S. Service Department (302-427-4050) or your local TA Instruments Service Representative.

Important: TA Instruments Manual Supplement

Please refer to the *TA Manual Supplement* to access the following important information supplemental to this document:

- TA Instruments Trademarks
- TA Instruments Patents
- Other Trademarks
- TA Instruments End-User License Agreement
- TA Instruments Offices

Table of Contents

- Notice 1
- Important: TA Instruments Manual Supplement 2**
- Requirements for the Controller (Computer) 4**
 - Other Hardware Considerations 5
 - Other Software Considerations 5
- System Configurations 6**
- Requirements for the Thermal Expansion System Instrument 7**
 - Instrument & Accessory Placement 7
 - DHD-300 7
 - DHD-1000 8
 - DVD-1650 10
 - DVD-2800 11
- TA Instruments Offices 12**

Requirements for the Controller (Computer)

A working thermal expansion system consists of one or more measurement instruments (e.g., DHD, DVD) and a computer configured with appropriate TA Instruments software (this latter combination is subsequently referred to as a controller). As a customer, you have two alternatives for configuring a controller. You can either purchase a computer and have it configured by a TA Instruments Service representative or you can purchase a suitable computer on your own and configure it at your site. In either case, the general requirements which follow are the same.



In situations where you are supplying the computer, it is assumed that you have reviewed these requirements and suitably prepared the controller prior to the scheduled system installation by the TA Instruments Service Representative. In fact, you will be required to provide hardcopy verification of your system setup using the instructions on page 5 before an installation visit will be scheduled.

Before installing the TA Instruments software, you should ensure that the computer system meets the following specifications:

Description	Requirement
Operating system ¹	Supported Operating Systems: 32-bit versions of Windows XP Professional, Vista Business and Ultimate, and Windows 7 Ultimate, Enterprise & Professional ²
Processor	Intel® Core™ 2 Duo (2.93 GHz with 3 MB L2 cache) or better
Memory	≥4 GB RAM
Hard drive	≥100 GB free on hard drive
CD-ROM	≥48X CD-ROM or DVD; CD-WRW
Screen resolution	1024 x 768 with ≥64K colors
Graphic memory	128 MB for Windows Vista or Windows 7
Screen (LCD) size	19" or greater (24" wide screen recommended)

1. Install Microsoft Operating System Service Pack, Internet Explorer and/or Direct X (if required). If you don't have the required versions of these packages, they can be obtained through the Microsoft web site (at www.microsoft.com/downloads) or by using the Microsoft Windows Update mechanism (accessed through the Start menu or by accessing <http://update.microsoft.com>).
2. Home version of Windows 7, XP, and/or Vista is not acceptable. Home version is missing certain functionality that is needed for optimized analyzer performance and efficiency.

Additional Requirements

Description	Requirements
Ethernet port/RS232 serial port	Ethernet port and unused RS232 serial port required
Support for custom reporting feature of data analysis	Microsoft Word® 97 or higher, Microsoft Excel® 97 or higher, and Adobe Acrobat Reader are also required.
Color scheme	For Vista, Windows Aero is required (other schemes may result in broken line display)

Additional Requirements

Description	Requirements
Log-in rights	Administrator

Other Hardware Considerations

- The computer should be a new computer that is not already attached to other analytical instruments.
- The PC requires an Ethernet port and unused RS232 serial port connection.
- The PC is not permitted to run other programs or any power saving features while a test is running.
- Network cards and/or certain network operation frequently interfere with the operation of the instrument control programs.

Other Software Considerations

- Peripherals (e.g., printer) must be from the known Windows compatible list. (See Microsoft's web site at <http://www.microsoft.com/hwtest> for the most current list.)
- TA Instruments is not responsible for resolving issues associated with connections to your corporate network. [See further information in the next section.]
- TA Instruments is not responsible for resolving hardware/software conflicts created by the addition of third party hardware or software to the computer.

System Configurations

TA Instruments thermal expansion systems communicate with the controller via an Ethernet port and RS232 serial port.

If you want to connect a thermal expansion system controller with instrument to your in-house network, additional considerations will apply. Review the scenarios shown below for the one that applies to your situation.

- **Controller Purchased from TA Instruments**

If you wish to have your TA controller connected to your company network, you must supply a second network interface card. The controller and instrument are shipped with pre-assigned (static) “TA Instruments-compatible” IP addresses. Your MIS/IT department must supply and configure a second Ethernet card for communication with your in-house network. Your TA Instruments serviceman can install this second card during start-up of the system.



Using this configuration, you can archive data to another computer on the network or print results on a network printer

- **Software Suite Purchased from TA Instruments**

If you wish to have your TA controller connected to your company network you must supply two network interface cards. Your MIS/IT department should configure one of the Ethernet cards in the computer that you are supplying for communication with your in-house network and must supply and install a second card to be used with the instrument. Your TA Instruments service representative will configure the second Ethernet card during start-up of the system to communicate with the thermal expansion instrument.



Using this configuration, you can archive data to another computer on the network or print results on a network printer

Requirements for the Thermal Expansion System Instrument

A Thermal Expansion system consists of an instrument and a computer for instrument control. To obtain installation requirements for the instrument and controller computer, refer to the appropriate sections of this document.

Instrument & Accessory Placement

Select a location for the instrument with adequate floor space and a rigid laboratory bench that is level. The instrument should be located in a dust-free, vibration-free environment, away from exposure to direct sunlight and direct air drafts. Unless otherwise specified in the instrument laboratory requirements, the work space must allow 0.6 m (24 in) in front of the instrument, 0.3 m (12 in) on each side, 0.3 m (12 in) behind the instrument. PC must be located within 1.5 m (60 in) of the instrument.

DHD-300

Dimensions:	Depth 46 cm (18 in), Width 64 cm (25 in), Height 31 cm (12 in)
Weight:	46 kg (100 lbs)
Power requirements:	208–240 VAC, 50/60 Hz ^{1 2} Supply voltages lower than indicated limit may result in a degradation of performance. The PC and peripherals require a separate 110–120 VAC outlet, surge protection suggested. All power strips must be fully grounded and carry the ground through to the sockets into which the computer is plugged.
Laboratory conditions:	Temperature 15–35°C Relative Humidity 5–80% (non-condensing at 15°C) Maximum Altitude 2000 m (6560 ft) Locate instrument in a ventilated space (hood, etc.) if noxious gases or vapors are generated ³ during the heating of specimens.
Laboratory requirements:	Flowing liquid nitrogen cooling: Maximum 22 psi (1.5 bar) supply pressure ⁴

1. This instrument is supplied with a power cord approximately 2 m (6.5 ft) long. The power cord requires the customer's electrician to connect a plug appropriate to the country of use. Ensure that the mains assigned do not also supply power to noise generating equipment nearby, such as motors, welders, transformers, etc.
2. An independent heavy GROUND wire must be provided through the power hook up. Improper grounding may cause severe damage for which supplier will not accept responsibility.
3. The instrument has provisions for the collection of effluent liquid nitrogen (gas form), which may be collected and piped away at the customer's option.
4. Instrument is supplied with inlet and outlet lines for the liquid nitrogen, and cryogenic solenoid valve for control of liquid nitrogen flow. Pressures exceeding 22 psi (1.5 bar) will damage the instrument.

DHD-1000

Dimensions:	Depth 46 cm (18 in), Width 64 cm (25 in), Height 31 cm (12 in)
Weight:	46 kg (100 lbs)
Power requirements:	208–240 VAC, 50/60 Hz ^{1 2} Supply voltages lower than indicated limit may result in a degradation of performance. The PC and peripherals require a separate 110–120 VAC outlet, surge protection suggested. All power strips must be fully grounded and carry the ground through to the sockets into which the computer is plugged.
Laboratory conditions:	Temperature 15–35°C Relative Humidity 5–80% (non-condensing at 15°C) Maximum Altitude 2000 m (6560 ft) Locate instrument in a ventilated space (hood, etc.) if noxious gases or vapors are generated ³ during the heating of specimens.
Laboratory requirements:	Permitted purge gases ⁴ : dry nitrogen, dry argon, and dry air. Purge gas inlet to the instrument preferred to be via a gas cylinder with appropriate 2 stage regulator, second stage (delivery to instrument) 0–10 psi (0–0.7 bar). Maximum delivery pressure to the instrument is 0.5 psi
Other:	Cooling Water and Drain⁵ City water and a free flowing open drain (like a sink) preferred. A wall mounted shut off valve is required. For plant wide recirculated water, the inlet/outlet differential should be a minimum of 25 psi (1.7 bar) higher for the inlet pressure. Cooling water inlet pressure is 40 psi minimum (2.75 bar), 80 psi maximum (5.5 bar). ⁶ Nominal flow rate of 1–2 L/min required. Chiller/circulator may be used, with a heat removal capacity of 200 W at 20°C and flow rate of 10–12 L/min. Permissible coolant temperatures are between 15 and 30°C, depending upon testing considerations. Optimum cooling water temperature is 20°C. Excessively cold water may result in “sweating” and possible corrosion of cooled metal surfaces. Warm water may not permit starting a test below 25°C.

1. This instrument is supplied with a power cord approximately 2 m (6.5 ft) long. The power cord requires the customer's electrician to connect a plug appropriate to the country of use. Ensure that the mains assigned do not also supply power to noise generating equipment nearby, such as motors, welders, transformers, etc.
2. An independent heavy GROUND wire must be provided through the power hook up. Improper grounding may cause severe damage for which supplier will not accept responsibility.
3. The instrument has provision for the collection of the effluent purge gas, which may be collected and piped away at the customer's option. Containment of the exhaust is recommended if noxious or poisonous gases are released by the specimen when heated.
4. Improperly regulated, pulsating, or poor quality purge gas may cause irregular or erratic instrument operation

5. The instrument is supplied with approximately 2 m (6.5 ft) of feed and drain hoses. The instrument is also supplied with hose barbs to be connected to customer-supplied tubing; minimum inside tubing diameter of 6.35 mm (or equivalent), minimum tube pressure rating of 100 psi (7 bar) for connection of customer supplied tubing. The customer is required to make all hose connections. Anti-siphon exit port supplied with instrument. Vacuum port supplied with instrument (QF-16 fitting).
6. Operating below the minimum pressure may result in erratic operation.

DVD-1650

Dimensions:	Depth 71 cm (28 in), Width 64 cm (25 in), Height 94 cm (37 in)
Weight:	57 kg (175 lbs)
Power requirements:	208–230 VAC, 50/60 Hz The PC and peripherals require a separate 110–120 VAC outlet, surge protection suggested. All power strips must be fully grounded and carry the ground through to the sockets into which the computer is plugged.
Laboratory conditions:	Temperature 15–35°C Relative Humidity 5–80% (non-condensing at 15°C) Maximum Altitude 2000 m (6560 ft)
Laboratory requirements ¹ :	Purge gas not required, but the specified gases may be used. Permitted purge gases ² : dry nitrogen, dry argon, and dry air. Purge gas inlet to the instrument preferred to be via a gas cylinder with appropriate 2 stage regulator, second stage (delivery to instrument) 0–10 psi (0–0.7 bar).
Other:	<p>Vacuum (Optional) The instrument is equipped for operation in vacuum. A vacuum pump and gauge station is available as an optional accessory. The optional vacuum pump module is configured for 110–240 VAC, depending on the country of use. It requires a separate outlet rated for 10 A. The optional vacuum gauge station has a US-style plug and may operate 110–240 VAC with the proper plug for the location of use.</p> <p>Cooling Water and Drain³ City water and a free flowing open drain (like a sink) preferred. A wall mounted shut off valve is required. For plant wide recirculated water, the inlet/outlet differential should be a minimum of 25 psi (1.7 bar) higher for the inlet pressure. Cooling water inlet pressure is 40 psi minimum⁴ (2.75 bar), 80 psi maximum (5.5 bar). Nominal flow rate of 1–2 L/min required. Chiller/circulator may be used, with a heat removal capacity of 200 W at 20°C and flow rate of 10–12 L/min. Permissible coolant temperatures are between 15 and 30°C, depending upon testing considerations. Optimum cooling water temperature is 20°C. Excessively cold water may result in “sweating” and possible corrosion of cooled metal surfaces. Warm water may not permit starting a test below 25°C.</p>

1. The instrument is supplied with approximately 2 m (6.5 ft) of feed and outlet hoses. The instrument is also supplied with hose barbs to be connected to customer-supplied tubing, minimum inside tubing diameter of 6.35 mm (or equivalent), minimum tube pressure rating of 100 psi (7 bar) for connection of customer-supplied tubing. The customer is required to make all hose connections. Anti-siphon exit port supplied with instrument.
2. Improperly regulated, pulsating, or poor quality purge gas may cause irregular or erratic instrument operation.
3. The instrument is supplied with approximately 2 m (6.5 ft) of feed and drain hoses. The instrument is also supplied with hose barbs and clamps to permit connection with customer feed and drain hoses if needed.
4. Operating below the minimum pressure may result in erratic operation.

DVD-2800

Dimensions:	Depth 71 cm (28 in), Width 64 cm (25 in), Height 94 cm (37 in)
Weight:	57 kg (175 lbs)
Power requirements:	208–230 VAC, 50/60 Hz, 100 Amp supply ¹ The PC and peripherals require a separate 110–120 VAC outlet, surge protection suggested. All power strips must be fully grounded and carry the ground through to the sockets into which the computer is plugged.
Laboratory conditions:	Temperature 15–35°C Relative Humidity 5–80% (non-condensing at 15°C) Maximum Altitude 2000 m (6560 ft)
Laboratory requirements:	Dry argon purge gas required ² Two stage regulator with second stage 40–50 psi maximum rating required. Set second stage delivery pressure to instrument: 10 psi Maximum delivery pressure to instrument: 0.5 psi Effluent purge gas may be vented into a fume hood. Purge gas inlet to the instrument preferred to be via a gas cylinder with appropriate 2 stage regulator, second stage (delivery to instrument) 0–10 psi (0 - 0.7 bar). Flowmeter, anti-siphon exit port, hose barb for 6 mm ID hose, and Q-25 vacuum port are supplied with the instrument. ³
Other:	Vacuum (Required) Vacuum use is required. Mechanical vacuum pump, gauge, and hose are available as an optional accessory Cooling Water and Drain⁴ City water and a free flowing open drain (like a sink) preferred. A wall mounted shut off valve is required. For plant wide recirculated water, the inlet/outlet differential should be a minimum of 25 psi (1.7 bar) higher for the inlet pressure. Cooling water inlet pressure is 40 psi minimum ⁵ (2.75 bar), 80 psi maximum (5.5 bar). Nominal flow rate of 1–2 L/min required. Chiller/circulator may be used, with a heat removal capacity of 200 W at 20°C and flow rate of 10–12 L/min. Permissible coolant temperatures are between 15 and 30°C, depending upon testing considerations. Optimum cooling water temperature is 20°C. Excessively cold water may result in “sweating” and possible corrosion of cooled metal surfaces. Warm water may not permit starting a test below 25°C.

1. Lower than indicated limit may result in a degradation of performance.
2. Improperly regulated, pulsating, or poor quality purge gas may cause irregular or erratic instrument operation.
3. The instrument is supplied with approximately 2 m (6.5 ft) of feed and outlet hoses. The instrument is also supplied with hose barbs to be connected to customer-supplied tubing; minimum inside tubing diameter of 6.35 mm (or equivalent), minimum tube pressure rating of 100 psi (7 bar) for connection of customer-supplied tubing. The customer is required to make all hose connections.
4. The instrument is supplied with approximately 2 m (6.5 ft) of feed and drain hoses. The instrument is also supplied with hose barbs and clamps to permit connection with customer feed and drain hoses if needed.
5. Operating below the minimum pressure may result in erratic operation.

TA Instruments Offices

For information on our latest products, contact information, and more, see our web site at:

<http://www.tainstruments.com>

TA Instruments — Waters LLC
Corporate Headquarters
159 Lukens Drive
New Castle, DE 19720
USA

Telephone: 302-427-4000

Fax: 302-427-4001

Email: info@tainstruments.com

