TA Instruments Installation Requirements for Microcalorimeter Systems

Thank you for ordering a Microcalorimeter system from TA Instruments. To ensure that installation of that 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.

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Requirements for a Nano Series Microcalorimeter Computer System

A working microcalorimeter system consists of one or more instruments (e.g., Nano DSC, Nano ITC) and a computer configured with appropriate TA Instruments software (this latter combination is subsequently referred to as a controller). The computer is configured by TA Instruments with the requirements listed below.

Description	Requirement
Operating system	**For Nano DSC 630x Series and MCDSC 4100:** Windows® 7 and Windows 8 32-bit **For Nano DSC 60200x Series, Nano ITC 60100x Series, MCDSC 600000, and Affinity ITC:** Windows 7 and Windows 8 32- or 64-bit
Processor	Intel® Core™ 2 Duo (2.93 GHz, 3 MB L2 cache) or better
Memory	≥ 4 GB RAM minimum. For best performance use ≥ 6 GB with 64-bit operating systems.
Hard drive	≥ 300 GB hard drive
CD-ROM	≥ 16X CD-ROM
Available PCI slots (full size)	**For Nano DSC 630x Series and MCDSC 4100:** One PCI slot is required for SCSI data acquisition board used with Nano DSC and MCDSC.
USB port	• **For Nano ITC 530x Series, Nano DSC 60200x Series, Nano ITC 60100x Series, MCDSC 600000, and Affinity ITC:** One free USB port (1.1, 2.0, or 3.0 compliant) is required. • **Autosampler systems:** One additional USB port is required (1.1, 2.0, or 3.0 compliant).
Screen resolution	1024 x 768 with ≥ 64K colors
Graphic card	128 MB, DirectX 10 or higher recommended
Other	• Nano DSC 630x and MCDSC 4100 instruments cannot be operated from laptop computers. • Switch off every Windows power-saving setting in order to avoid interrupting continuous program operation. The list of prohibited settings includes, but is not limited to, functions which hibernate the PC or change clock speeds, or shut down any hardware such as the display, hard drive, USB, processor, etc. Do not configure Windows Update for automatic installation of system updates, as many of these will restart the computer. Windows Update may be configured to automatically download but ask for permission to install. Windows screen savers are acceptable.
Data Acquisition Boards	• **For Nano DSC 630x Series:** National Instruments Nidaq - M Series PCI-6281 (supplied) • **For MCDSC 4100:** Measurement Computing PCI-DIO24 (supplied)

Note that TA Instruments is not responsible for resolving issues associated with connections to your corporate network or resolving hardware/software conflicts created by the addition of third party hardware or software to the computer.

Requirements for a Nano Series Microcalorimeter Instruments

The following section summarizes laboratory requirements by instrument. Each section contains all of the requirements for that particular instrument. Therefore, some items will be redundant if you have purchased a multi-instrument system.

Nano DSC

Dimensions:	**Nano DSC 630x Series:** Depth 38 cm (15 in), Width 37 cm (14 in), Height 30 cm (12 in) **Nano DSC 60200x Series:** Depth 53 cm (21 in), Width 35 cm (14 in), Height 28 cm (11 in)
Weight:	**Nano DSC 630x Series:** 17 kg (37 lbs) **Nano DSC 60200x Series:** 17 kg (37 lbs)
Power requirements:	100–240 VAC, 3A, 50/60 Hz Grounded, single-phase line for instrument and computer, not shared with motors, heaters, or compressors (15 amp for voltages near 120 VAC, or 10 amp for voltages near 230 VAC). Surge suppressor power strip (not supplied) Electrical power cord: The plug of the cord must be rated to carry at least 125% of the product current rating. The cord length must be less than 4.5 meters and must be UL or CSA approved.
Laboratory conditions:	Temperature 15–30°C Conditions: Relative Humidity 5–80% (non-condensing) Temperature Stability + 1°C (with changes in temperature being gradual shifts instead of fast changes). Instrument should be located in a dust-free, vibration-free environment, away from exposure to direct sunlight and direct air drafts. (Pollution Degree 2 Environment) Maximum Altitude 2500 m (8200 ft)
Laboratory requirements (Nano DSC Autosampler):	Filtered, compressed nitrogen, regulated to 45 psi (3 bar), with 1/16-inch outlet line diameter 2 to 5 user-supplied bottles for rinsing/cleaning solutions ($\geq$ 1 L each) 2 user-supplied waste collection bottles ($\geq$ 2 L each)
Typical laboratory lab space (not including computer, display, keyboard, mouse)	Nano DSC: 0.6 meters (2 ft) wide Nano DSC Autosampler: 0.9 to 1.2 meters (3 to 4 ft) wide

ITC

Dimensions:	**Nano ITC 530x Series:** Depth 38 cm (15 in), Width 37 cm (14 in), Height (burette in place) 40 cm (16 in) **Nano ITC 60100x Series:** Depth 53 cm (21 in), Width 35 cm (14 in), Height 28 cm (11 in) **Affinity ITC** Depth 53 cm (21 in), Width 35 cm (14 in), Height 51 cm (20 in) minimum, 71 cm (28 in) maximum
Weight:	**Nano ITC 530x Series:** 20 kg (43 lbs) **Nano ITC 60100x Series:** 17 kg (37 lbs) **Affinity ITC** 20 kg (44 lbs)
Power requirements:	100–240 VAC, 3A, 50/60 Hz Grounded, single-phase line for instrument and computer, not shared with motors, heaters, or compressors (15 amp for voltages near 120 VAC, or 10 amp for voltages near 230 VAC). Surge suppressor power strip (not supplied) Electrical power cord: The plug of the cord must be rated to carry at least 125% of the product current rating. The cord length must be less than 4.5 meters and must be UL or CSA approved.
Laboratory conditions:	Temperature 15–30°C Conditions: Relative Humidity 5–80% (non-condensing) Temperature Stability + 1°C (with changes in temperature being gradual shifts instead of fast changes). Instrument should be located in a dust-free, vibration-free environment, away from exposure to direct sunlight and direct air drafts. (Pollution Degree 2 Environment) Maximum Altitude 2500 m (8200 ft)
Typical laboratory lab space (not including computer, display, keyboard, mouse)	Nano ITC and Affinity ITC: 0.6 meters (2 ft) wide Affinity ITC Auto (includes Autosampler): 0.9 to 1.2 meters (3–4 ft wide)

MCDSC Model 600000

Dimensions:	Depth 53 cm (21 in), Width 35 cm (14 in), Height 31 cm (12 in)
Weight:	21 kg (46 lbs)
Power requirements:	100–240 VAC, 4 amps, 50/60 Hz Grounded, single-phase line for instrument and computer, not shared with motors, heaters, or compressors (15 amp for voltages near 120 VAC, or 10 amp for voltages near 230 VAC). Electrical power cord: The plug of the cord must be rated to carry at least 125% of the product current rating. The cord length must be less than 4.5 meters and must be UL or CSA approved.
Laboratory conditions:	Temperature 15–30°C Conditions: Relative Humidity 5–80% (non-condensing) Temperature Stability + 1°C (with changes in temperature being gradual shifts instead of fast changes). Instrument should be located in a dust-free, vibration-free environment, away from exposure to direct sunlight and direct air drafts. (Pollution Degree 2 Environment) Maximum Altitude 2500 m (8200 ft)
Laboratory requirements:	Requires external water circulator. A dry purge gas source (Ex. air, nitrogen, argon) at low pressure (5 to 10 psi) is required for operation of the instrument with sample temperatures below the dew point conditions in the laboratory.
Typical laboratory lab space (not including computer, display, keyboard, mouse)	0.6 meters (2 ft) wide

Requirements for a TAM Series Microcalorimeter Computer System

The TAM IV must be connected to a computer via USB cable. The TAM III can operate as a standalone instrument but must be connected to either a network or a computer in order to download experiment data and reports. The TAM Air must be connected directly to a computer via USB cable. In order to take full advantage of the TAM III, a network connection is recommended.

Network Connection

The following are the requirements when connecting to a network:

- Ethernet network with network connection close to the TAM III
- RJ45 cable for connecting TAM III with network (included)

Computer Connection

The following computer specifications are required for TAM Assistant:

Operating system[a]	**TAM Assistant and TAM Air Assistant:** Windows 7 or Windows 8 32-bit Service Pack 1 or Windows 7 or Windows 8 64-bit Service Pack 1 **SolCal:** Windows XP Service Pack 3 or Windows 7 32-bit or 64-bit Service Pack 1
File system	NTFS required
Processor	Intel® Core™ 2 Duo (2.93 GHz, 3 MB L2 cache) or better
Memory	≥ 4 GB RAM minimum
Hard drive	≥ 80 GB hard drive
CD-ROM	≥ 16X CD-ROM
Ports	**TAM IV:** USB **TAM III:** Ethernet network connection **TAM Air:** USB **SolCal with TAM III:** Ethernet connection for TAM III serving as thermostat, RS-232 serial port for the TAM accessory Interface. **SolCal with TAM IV:** In the same computer, use an additional USB port for the TAM Accessory Interface. SolCal software is run simultaneously with TAM Assistant.

a. Install Microsoft Operating System Service Pack (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).

Other Hardware Considerations

- The computer should be a new computer that is not already attached to other analytical instruments.
- Before the TA Instruments Service Representative will schedule a visit to install new instruments, please obtain a hard copy of the Windows® system summary as instructed below to verify that your system is adequate. Please fax this verification sheet along with your company identification and phone number to TA Instruments Service at 302-427-4054.

Obtaining Hardcopy System Verification For Windows

1 Select **Programs** > **Accessories** > **System Tools** > **System Information** from the **Start** menu.

2 Verify **System Summary** is highlighted. .

If you print out this summary from this step you will receive all system information (more than 50 pages). Follow the remaining steps to copy and print only summary information

3 Select **Edit** > **Select All** then **Edit** > **Copy**.

4 Open Notepad or another word processing program.

5 Select **Edit** > **Paste** then **File** > **Print**.

Other Software Considerations

- Peripherals (e.g., printer) must be from the known Windows Vista compatible list. (See Microsoft's website 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.

Requirements for TAM Series Microcalorimeter Instruments

The following section summarizes laboratory requirements by instrument. Each section contains all of the requirements for that particular instrument. Therefore, some items will be redundant, if you have purchased a multi-instrument system.

TAM IV

Dimensions:	Depth 76 cm (30 in), Width 58 cm (23 in), Height 100 cm (40 in)
Weight:	160 kg (350 lbs)
Power requirements:	100–240V, 50/60 Hz, 1400 Watts Grounded, single-phase line for instrument and computer, not shared with motors, heaters, or compressors (15 amp for voltages near 120 VAC, or 10 amp for voltages near 230 VAC); no fluctuation between ground and neutral. Electrical power cord: The plug of the cord must be rated to carry at least 125% of the product current rating. The cord length must be less than 4.5 meters and must be UL or CSA approved.
Laboratory conditions:	Temperature 15–30°C Conditions: Relative Humidity 5–80% (non-condensing) Temperature Stability $\pm$ 1°C over 24 hrs (with changes in temperature being gradual shifts instead of fast changes). Instrument should be located in a dust-free, vibration-free environment, away from exposure to direct sunlight and direct air drafts. (Pollution Degree 2 Environment) Maximum Altitude 2500 m (8200 ft)
Laboratory requirements:	Instrument requires 300 mm (12 in) space on each side for air flow. Ensure Nitrogen source is available prior to installation for purging the oil reservoir. Dry gas supply at 3 liters/minute (air is acceptable) for cabinet purging when operating near or below the ambient dew point. Low pressure dual stage regulator that provides 10–50 psi will suffice. All gases must be dry and free of oil, dirt and water. If any accessories are included with the TAM IV, a minimum bench space of 40 cm (15.7 in) is needed beside the TAM IV.
Typical laboratory floor space	Depth 1 meter (3.5 ft), Width 1 to 1.2 meters (3.5 to 4 feet)
Typical laboratory bench space	The TAM IV requires a computer for operation.
Pre-installation storage conditions	The TAM IV is shipped in a crate and the accessories (including the thermostat bath oil) are shipped on a pallet. Store both in an area where the temperature is maintained within the range of 15° to 30°C (60° to 85°F) prior to installation. If possible, store them at the same temperature as the laboratory.

TAM III

Dimensions:	Depth 670 mm (26.4 in), Width 593 mm (23.4 in), Height 980 mm (38.6 in)
Weight:	110 kg (242.5 lbs)
Power requirements:	Available in two versions: 110 VAC 50/60 Hz or 220 VAC 50/60 Hz; 800 Watts Grounded, single-phase line for instrument and computer, not shared with motors, heaters, or compressors (15 amp for voltages near 120 VAC, or 10 amp for voltages near 230 VAC); no fluctuation between ground and neutral. Electrical power cord: The plug of the cord must be rated to carry at least 125% of the product current rating. The cord length must be less than 4.5 meters and must be UL or CSA approved.
Laboratory conditions:	Temperature 15–30°C Conditions: Relative Humidity 5–80% (non-condensing) Temperature Stability ± 1°C over 24 hrs (with changes in temperature being gradual shifts instead of fast changes). Instrument should be located in a dust-free, vibration-free environment, away from exposure to direct sunlight and direct air drafts. (Pollution Degree 2 Environment) Maximum Altitude 2500 m (8200 ft)
Laboratory requirements:	Instrument requires 300 mm (12 in) space on each side for air flow. Ensure Nitrogen source is available prior to installation for purging the oil reservoir. Low pressure dual stage regulator that provides 10–50 psi will suffice. All gases must be dry and free of oil, dirt and water. If any accessories are included with the TAM III, a minimum bench space of 40 cm (15.7 in) is needed beside the TAM III. If a SolCal is included with the TAM III, bench space for a computer is also needed.
Typical laboratory floor space	Depth 1 meter (3.5 ft), Width 1 to 1.2 meters (3.5 to 4 feet)
Typical laboratory bench space	The SolCal accessory requires a computer for operation.
Pre-installation storage conditions	The TAM III is shipped in a crate and the accessories (including the thermostat bath oil) are shipped on a pallet. Store both in an area where the temperature is maintained within the range of 15° to 30°C (60° to 85°F) prior to installation. If possible, store them at the same temperature as the laboratory.

TAM Air

Dimensions:	Depth 397 mm (15.6 in), Width 462 mm (18.2 in), Height 900 mm (35.4 in)
Weight:	40 kg (88 lbs)
Power requirements:	Two models are available: 110 VAC ±10%, 50/60 Hz; or 220 VAC ±10%, 50/60 Hz. Fuse ratings are 4 Amperes (120V) or 2 Amperes (230V) Grounded, single-phase line for instrument and computer, not shared with motors, heaters, or compressors (15 amp for voltages near 110 VAC, or 10 amp for voltages near 220 VAC); no fluctuation between ground and neutral. Electrical power cord: The plug of the cord must be rated to carry at least 125% of the product current rating. The cord length must be less than 4.5 meters and must be UL or CSA approved.
Laboratory conditions:	The TAM Air can achieve temperature control at settings ranging from 70°C above to 15°C below ambient conditions. Relative Humidity 5–80% (non-condensing) Temperature Stability $\pm$ 1°C over 24 hrs (with changes in temperature being gradual shifts instead of fast changes). Instrument should be located in a dust-free, vibration-free environment, away from exposure to direct sunlight and direct air drafts. (Pollution Degree 2 Environment) Maximum Altitude 2500 m (8200 ft)
Laboratory requirements:	A dry purge gas source (air, nitrogen or argon for example) at low pressure (5 to 10 psi) is required for operation of the instrument with sample temperatures below the dew point conditions in the laboratory.
Typical laboratory floor space	Depth 1 meter (3.5 ft), Width 1 meter (3.5 feet)
Typical laboratory bench space	The TAM Air is operated by a personal computer using the TAM Air Assistant software application (supplied). One free USB port is required.
Pre-installation storage conditions	Store the TAM Air in an area where the temperature is maintained within the range of 15° to 30°C (60° to 85°F) prior to installation. If possible, store it at the same temperature as the laboratory.

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