Discovery DMA 850

Site Preparation Guide

Revision K Issued January 2024

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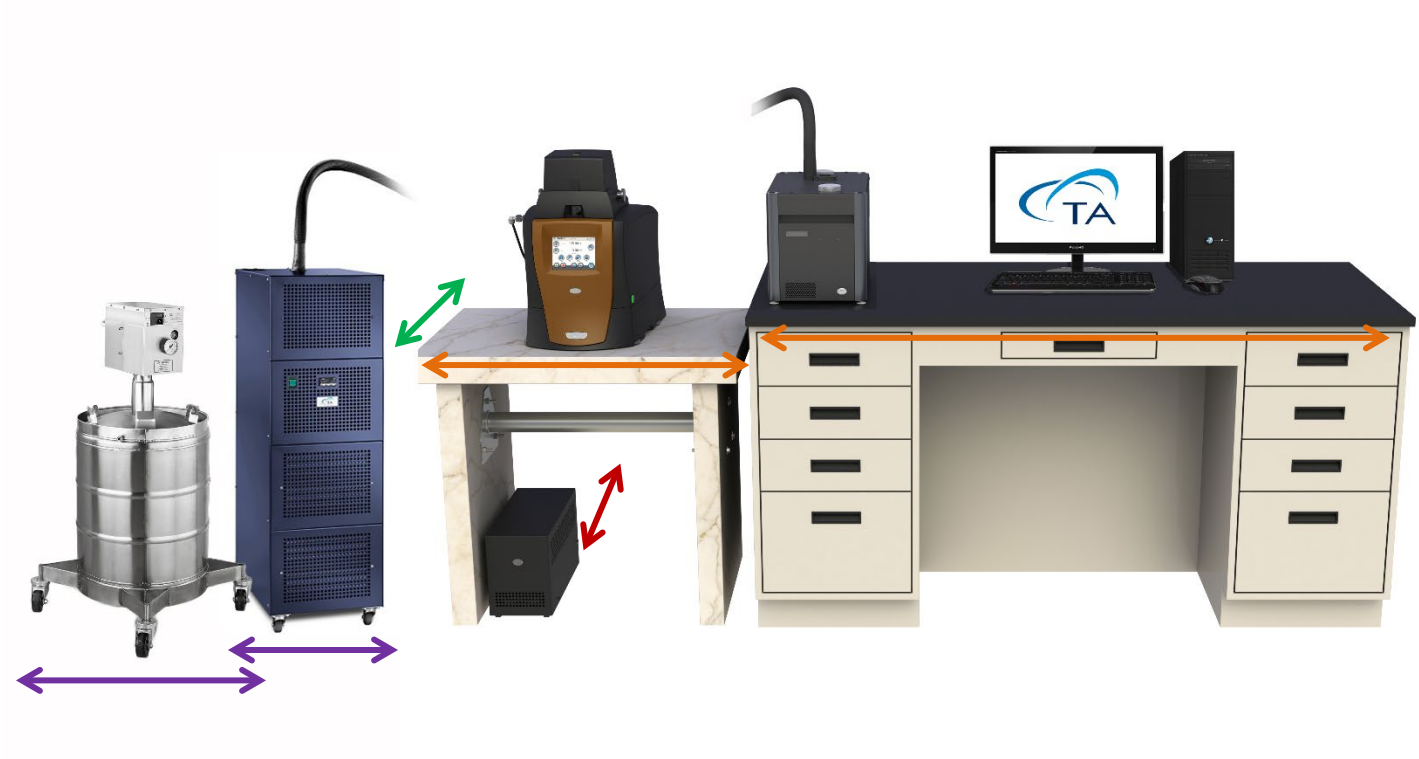
Ideal Setup

IDEAL PLACEMENT AND BENCH MEASUREMENTS

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



Floor space for ACS: 4 ft^2

Floor space for GCA: 4 ft^2

Floor space for DMA-RH: 1.5 ft^2

Bench width: 61–183 cm (24–72 in)

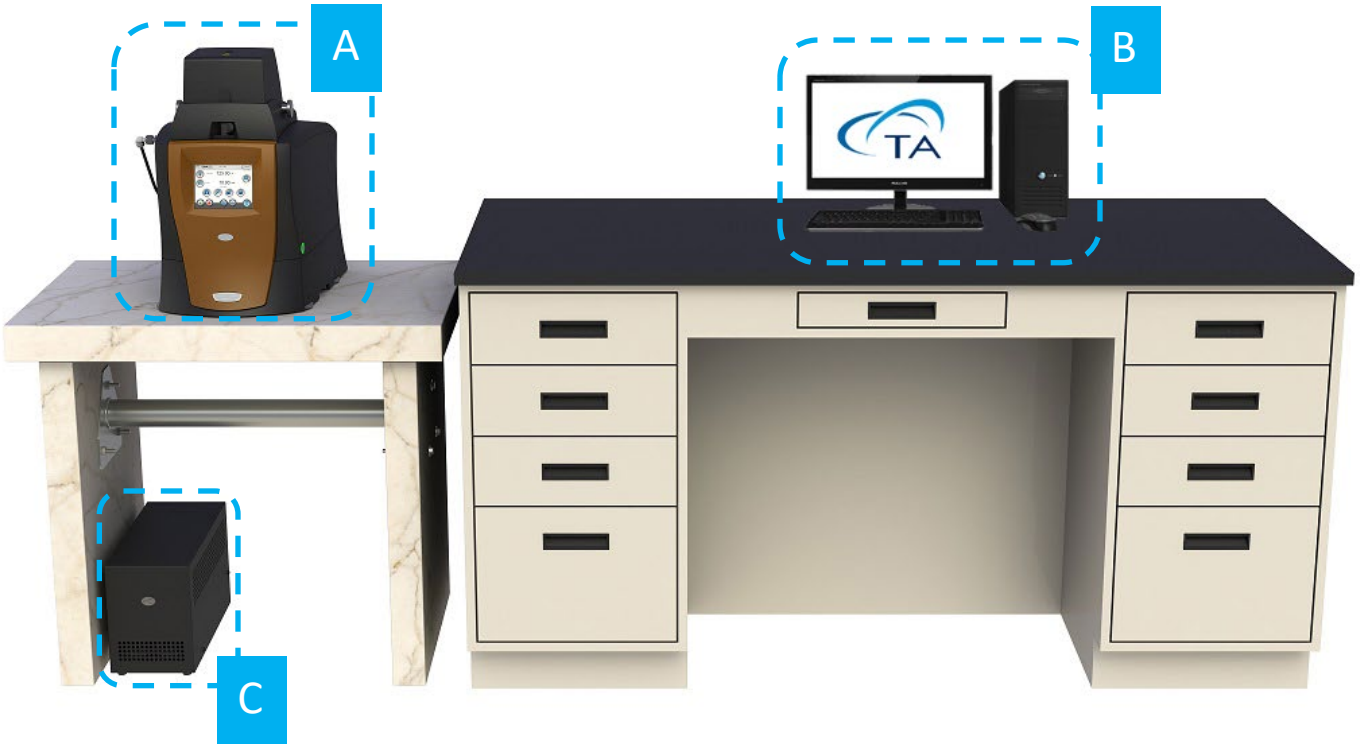
Marble table width: 89 cm (35 in)

Marble table depth: 61 cm (24 in)

Marble table distance from the wall: 31 cm (12 in) min.

System Components

MAIN SYSTEM COMPONENTS



A. Instrument

B. Controller

C. Power Control Box

Instrument Measurements

DMA 850

Height with furnace OPEN: 68.5 cm (27 in)

Height with furnace CLOSED: 53.5 cm (21 in)

Width: 38 cm (15 in)

Depth: 47 cm (18.5 in)

Weight: 34 kg (75 lbs)

POWER CONTROL BOX

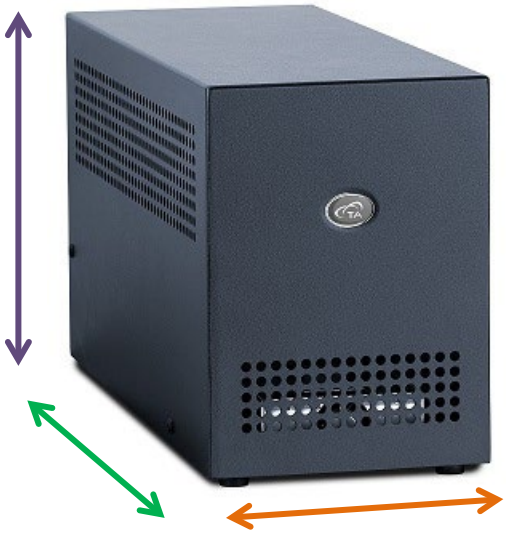
Height: 25 cm (10 in)

Width: 18 cm (7 in)

Depth: 43 cm (17 in)

Weight: 5.6 kg (12.5 lbs)

Power cable length:
200 cm (78 in)



Utility Requirements

POWER

- 100–240 VAC, 47–63 Hz, 1400 W
- Safety ground per local regulation
- Neutral to ground <1 volt

European

NEMA 5-15P

GAS

Furnace purge gases: air, nitrogen, argon, helium

Description	Requirement
Air bearing pressure:	• 410–450 kPa (60–65 psig) • Flow rate: 4 L/min
Cooling gas pressure:	175–830 kPa (20–120 psig)
Conditions	• Must be dry • Must be free from oil and dirt
Other	1/8” polyethylene tubing and fittings are supplied in the accessory kit

Computer Requirements

HARDWARE REQUIREMENTS

Description	Requirement
Processor	• Intel® Core™ i5 8400 or better • 2.8 GHz with 9 MB L2 cache
Memory	≥ 16 GB RAM DDR4 2666 SDRAM
Hard drive	≥ 80 GB free space • 1.5 GB required for Full version of TRIOS • 675 MB required for Lite version of TRIOS (without Online help)
DVD (optional)	≥ 48x CD-ROM or DVD (optional for installing TRIOS)
Screen resolution	Required: 1280 x 1024 with 24-bit colors Recommended: 1920 x 1080 with 24-bit colors
Graphic memory	128 MB
Screen (LCD) size	Required: 19” or greater Recommended: 24” wide screen
Network card	Ethernet 10Base T/100 Base TX
Additional Ethernet card(s)	Necessary if connecting the instrument directly and access is needed to the Corporate LAN.
Ethernet Cabling	10/100BaseTX Ethernet hub/switch. Must be EIA-568B Category 5+ UTP
Client-Server Protocol	DHCP
Image Capture (Camera Option)	DirectX 9.0 or higher
TCP/IP ports used	• TCP: 20010, 20011 • UDP: 5050, 5056

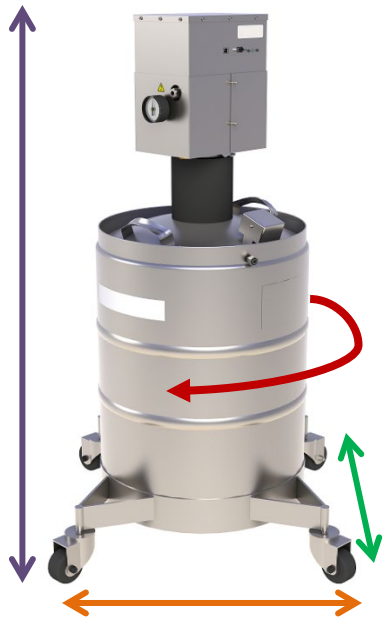
Computer Requirements

SOFTWARE REQUIREMENTS

Item	TRIOS
Operating System	• Windows 10 or 11 Enterprise, Ultimate, & Professional • Home version not supported • ≥ 64-bit version
Internet	**Internet connection is strongly recommended for ongoing support after installation**
Service Pack	Microsoft Operating System Service Pack
Updates	Windows Operating System and associated Microsoft updates must be up to date. Windows 10 must be 1709 or later.
Network	*A second network card for corporate connection is recommended.* *TA Instruments is not responsible for resolving issues associated with connections to your corporate network.*
Conflicts	*TA Instruments is not responsible for resolving hardware/software conflicts created by the addition of third-party hardware or software to the computer.*

Gas Cooling Accessory (GCA) V3

GCA V3 MEASUREMENTS



Dewar diameter: 46 cm (18 in)

Height: 112 cm (44 in)

Width: 46 cm (18 in)

Depth: 79 cm (31 in)

Weight EMPTY: 47 kg (104 lbs)

Weight FULL: 88 kg (194 lbs)

Transfer line: 1.8 m (6 ft)

GCA V3 REQUIREMENTS

Requirements	
	• 100–240 VAC at 0.9 kVa, 47–63 Hz • Approved for operation on a 20 A branch circuit with protective conductor (ground)
	• Bulk low-pressure liquid nitrogen tank to refill the 50 L GCA dewar • Pressure: 90 kPa gauge (13 psig) relief valve on tank 345 kPa gauge (50 psig) on fill line • Use low pressure supply tank only. Recommended filling pressure is 140 to 170 kPa gauge (20 to 25 psig)

Circulator Power Cooling Gas LN_2 Fluid Light Hardware Software Temp Lab Customer

Air Chiller System (ACS)

ACS-2 MEASUREMENTS WITH CHILLER PANEL

Height: 88.5 cm (35 in)

Width: 67 cm (26.5 in)

Depth: 56 cm (22 in)

Weight: 103 kg (227 lbs)

ACS-3 MEASUREMENTS WITH CHILLER PANEL

Height: 112 cm (44 in)

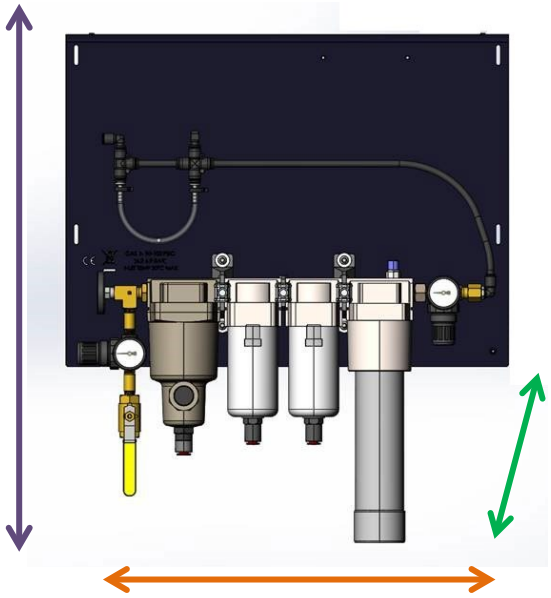
Width: 67 cm (26.5 in)

Depth: 56 cm (22 in)

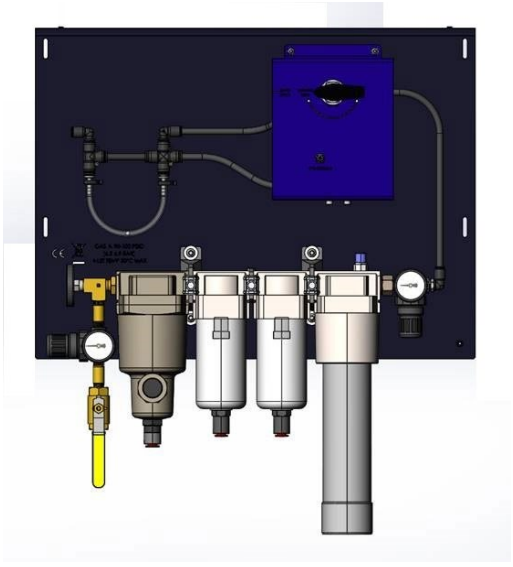
Weight: 128 kg (282 lbs)

Air Chiller System (ACS)

CHILLER PANELS



DMA Chiller Panel
P/N 986400.901



Combined DHR/DMA Chiller Panel
P/N 405400.901
P/N 986400.901 with DHR upgrade kit installed

Height: 64 cm (25 in)

Width: 56 cm (22 in)

Depth: 38.1 (15 in)

Weight: 986400.901–6.75 kg (15 lbs)
405400.901–7.25 kg (16 lbs)

Air Chiller System (ACS)

AIR CHILLER SYSTEM REQUIREMENTS

Requirements	
	• 50 Hz: 207–252 VAC (refer to the serial number plate on the rear of the unit. The ACS is line frequency specific.) • 60 Hz: 216–252 VAC (refer to the serial number plate on the rear of the unit. The ACS is line frequency specific.) • 8A, 9A, 9.1A, or 11A (refer to the serial number plate on the rear of the unit) • US sites require an L6-20 single-phase outlet  NEMA L6-20 plug

	• Gas:
	  • Air or nitrogen
	  • Pressure: 6.9 bar (100 psig)
	  • Flow rate: 200 SLPM
	  • Temperature: 20–30°C
	  • Dew point: -40°C (-40°F) **NOTE**: Dew point is specified at operating pressure. Supplying dryer air at a lower dew point will extend continuous operation.

	• Lab Environment (must be below 25°C): • 21°C–24°C = Ideal • Leave 20 cm (8 in) of space in the front and back of the ACS for ventilation. • 4 ft^2 required floor space for the ACS.

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Nitrogen Purge Cooler (NPC)

NITROGEN PURGE COOLER MEASUREMENTS

Height: 38 cm (15 in)

Width: 30 cm (12 in)

Depth: 18 cm (7 in)

Weight EMPTY: 3 kg (6 lbs)

Volume: 2.5 L

NITROGEN PURGE COOLER REQUIREMENTS

Requirements	
	• Nitrogen only • Pressure: 172–827 KPa (25–120 psig) • Flow Rate: 30 L/m
	• Relative humidity: 5% to 80% RH from 15°C to 31°C, decreasing to 66% RH at 35°C (non-condensing) • Operating altitude: 2000 meters minimum
	Fill the container with LN_2

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DMA-RH

DMA-RH ACCESSORY MEASUREMENTS

Height: 38 cm (15 in)

Width: 30 cm (12 in)

Depth: 51 cm (20 in)

Weight EMPTY: 30 kg (67 lbs)

DMA-RH ACCESSORY REQUIREMENTS

Requirements	
	90–265 VAC, 45–65 Hz
	• Dewpoint of -40°C or less • Pressure: 20 psig • Flow Rate: 3 L/m • Nitrogen
	15–35°C ambient temperature
	Requires distilled water. **NOTE**: Distilled water ONLY. Deionized, HPCL, RO, and tap water are not suitable and may damage the unit and void the warranty if used.

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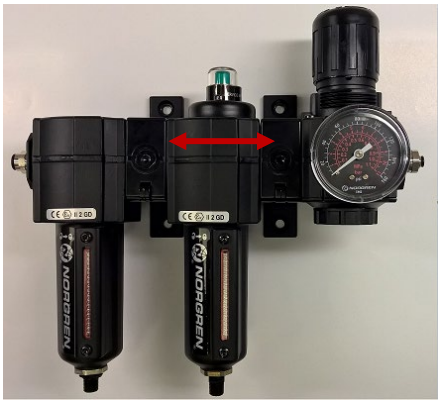
Air Filter Regulator

AIR FILTER REGULATOR MEASUREMENTS



P/N 986320.901

Height: 24 cm (9.4 in)

Width: 23 cm (9 in)

Weight: 2.7 kg (6 lbs)

Port size: 1/8”

Distance between mounting holes: 7.5 cm (2.95 in)

AIR FILTER REGULATOR REQUIREMENTS

Requirements
• Inlet pressure: 551–1034 KPa (80–150 psig) • Outlet pressure: 413 KPa (60 psig) • Must be dry, and free from oil or dirt

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Air Compressor Accessory

AIR COMPRESSOR MEASUREMENTS

Height: 23 cm (9 in)

Width: 38 cm (15 in)

Depth: 38 cm (15 in)

Weight: 10 kg (22 lbs)

AIR COMPRESSOR REQUIREMENTS

Requirements	
	Outlet pressure: 413 KPa (60 psig)
	120 VAC, 50/60 Hz, 0.3 Kw or TA Instruments Step-Down Transformer (P/N 203570.001) for 220 VAC environments.
	Instrument should not be in an enclosed area; heat build-up occurs if air does not flow freely.

Circulator Power Cooling Gas LN_2 Fluid Light Hardware Software Temp Lab Customer

Site Preparation Checklist

✓ Discovery DMA 850

Sufficient bench and floor space for instrument, computer, and cooling accessory (if needed)

- ☐ Bench length: 61–183 cm (24–72 in)
- ☐ Bench depth: 76 cm (30 in)
- ☐ Marble table length: 89 cm (35 in)
- ☐ Marble table depth: 61 cm (24 in)
- ☐ Floor space for cooling accessory:
  - ☐ GCA: 4 ft^2
  - ☐ ACS: 4 ft^2
  - ☐ DMA-RH: 1.5 ft^2

- ☐ Neutral to ground < 1 volt
- ☐ Instrument power: 100–240 VAC, 47–63 Hz, 1440 W
- ☐ Pneumatics: 80–150 psig
- ☐ ACS power:
  - ☐ 207–252 VAC, 50 Hz
  - ☐ 216–252 VAC, 60 Hz

- ☐ Computer meets all hardware requirements
  - ☐ I have two network cards installed on the computer to be able to connect to both the corporate LAN and the instrument.
- ☐ Computer meets all software requirements
- ☐ Customer's IT personnel has provided Administrative privileges on the controller computer
- ☐ The Customer's IT personnel will be on site the day of installation

Accessory (check all that apply):

- ☐ Air Chiller System with Chiller Panel
- ☐ Air Filter Regulator Assembly
- ☐ Air Compressor Accessory
- ☐ Nitrogen Purge Cooler
- ☐ Gas Cooling Accessory
- ☐ DMA-RH Accessory

- ☐ 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.

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

_____ ___/___/___

Customer *DD* *MM* *YYYY*

_____ _____ _____ _____

Company *City* *State* *Country*

Please send a signed copy of the completed checklist to your local Service representative.

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