

Discovery DMA 850



Site Preparation Guide

Table of Contents

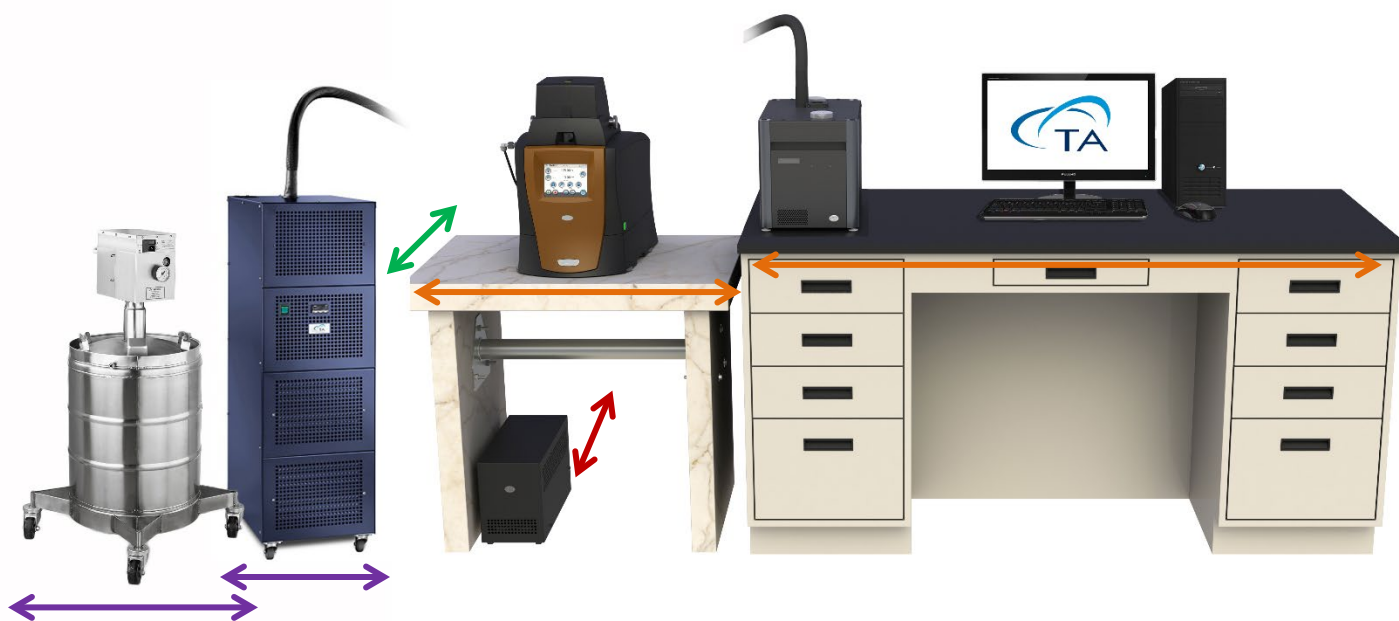
| | |
|--------------------------------------|-------|
| Table of Contents | 2 |
| Ideal Setup | 3 |
| System Components..... | 4 |
| Instrument Measurements | 5 |
| Utility Requirements..... | 6 |
| Computer Requirements | 7-8 |
| Hardware Requirements..... | 7 |
| Software Requirements | 8 |
| Accessories | 9–16 |
| Gas Cooling Accessory (GCA) | 9 |
| Air Chiller System (ACS) | 10–12 |
| Nitrogen Purge Cooler (NPC) | 13 |
| DMA-RH Accessory | 14 |
| Air Filter Regulator Assembly | 15 |
| Air Compressor Accessory (ACA) | 16 |
| Site Preparation Checklist | 17 |
| TA Instrument Offices..... | 18 |

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 ft²

Floor space for GCA: 4 ft²

Floor space for DMA-RH: 1.5 ft²

Bench width: 61–183 cm
(24–72 in)

Marble table width: 89 cm (35 in)

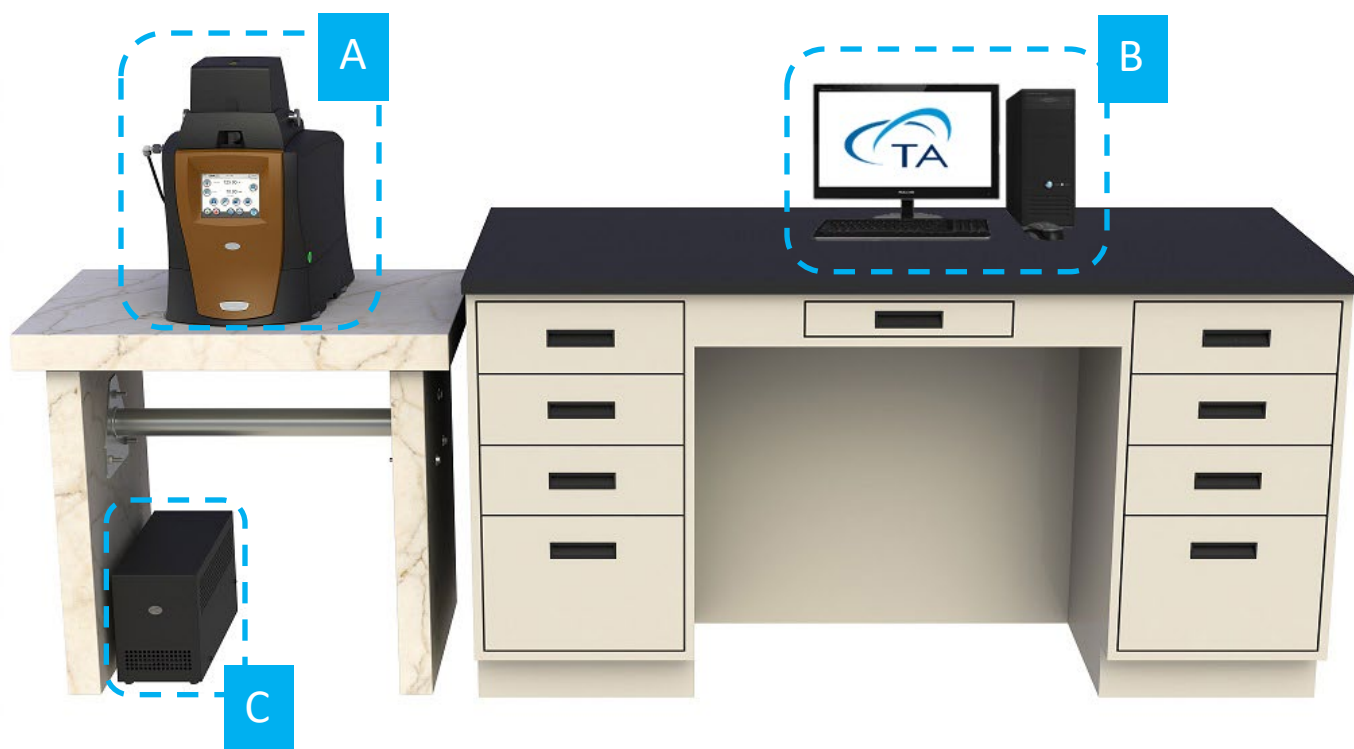
Marble table depth: 61 cm (24 in)

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

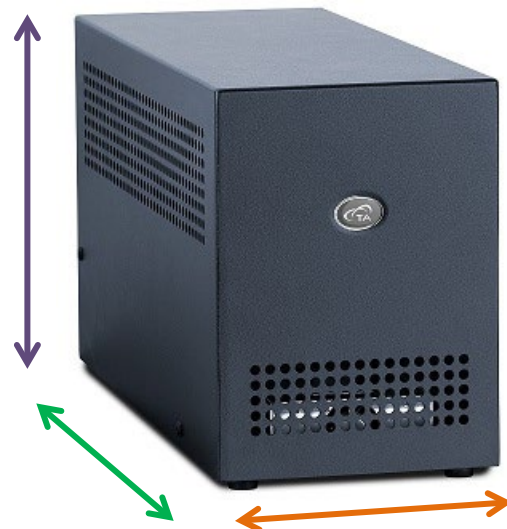
Height: 25 cm (10 in)

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: | <ul style="list-style-type: none">• 410–450 kPa (60–65 psig)• Flow rate: 4 L/min |
| Cooling gas pressure: | 175–830 kPa (20–120 psig) |
| Conditions | <ul style="list-style-type: none">• 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 | <ul style="list-style-type: none">• 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 <ul style="list-style-type: none">• 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 | <ul style="list-style-type: none">• TCP: 20010, 20011• UDP: 5050, 5056 |

Computer Requirements



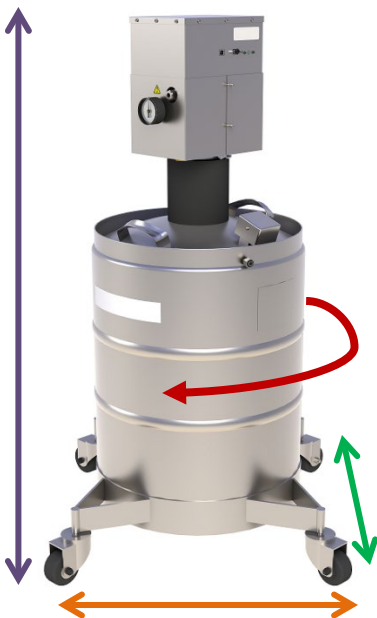
SOFTWARE REQUIREMENTS

| Item | TRIOS |
|------------------|---|
| Operating System | <ul style="list-style-type: none">• 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 | <i>A second network card for corporate connection is recommended.</i> <i>TA Instruments is not responsible for resolving issues associated with connections to your corporate network.</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> |

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



LN₂



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)

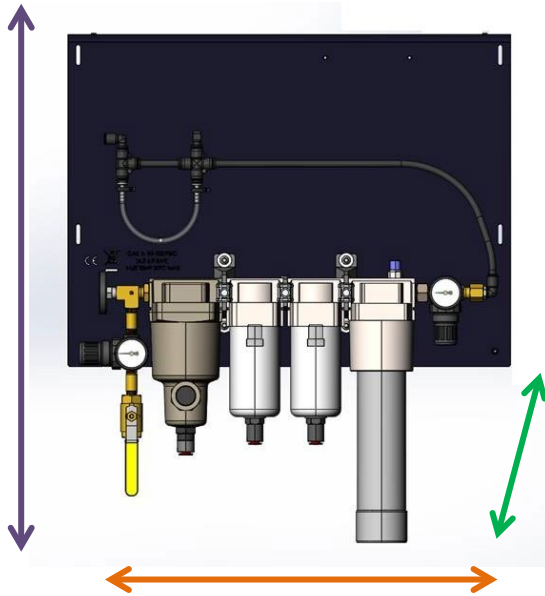
Depth: 56 cm (22 in)

Weight: 128 kg (282 lbs)

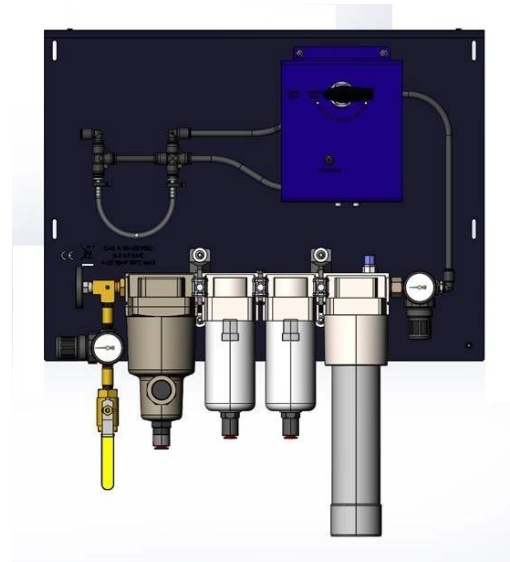
Air Chiller System (ACS)



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



- 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.



NEMA L6-20 plug



- 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 ft² required floor space for the ACS.



Circulator



Power



Cooling



Gas



LN₂



Fluid



Light



Hardware



Software



Temp



Lab



Customer

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 LN₂



Circulator



Power



Cooling



Gas



LN₂



Fluid



Light



Hardware



Software



Temp



Lab



Customer

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.



Circulator



Power



Cooling



Gas



LN₂



Fluid



Light



Hardware



Software



Temp



Lab



Customer

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



Circulator



Power



Cooling



Gas



LN₂



Fluid



Light



Hardware



Software



Temp



Lab



Customer

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



LN₂



Fluid



Light



Hardware



Software



Temp



Lab



Customer

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