

JANUS Varispan + MDT Automated Workstation powered by Packard innovation



Introduction

The JANUS Varispan™ + MDT Automated Workstation offers multiple pipetting technologies on a single instrument platform with options to automate plate movement. The instrument consists of a modular platform that expands and combines the flexibility of a 4- or 8-tip Varispan arm with the speed of a 96- or 384-channel Modular Dispense Technology™ (MDT) dispense head. With the convergence of PerkinElmer's key liquid handling technologies, flexibility is no longer compromised for throughput. The JANUS Varispan + MDT is available in the Standard, Integrator and Expanded platforms to address application capacity requirements.

Instrument features

- Computer controlled Cartesian X-Y-Z robotic liquid handling platform with options to upgrade various pipetting and labware movement arms.
- Independent Z motion: Varispan arm provides four or eight independent drives capable of independent motion and independent liquid level sensing in the Z direction.
- Automated interchangeable head functionality: MDT arm provides 96- and 384-channel dispense heads for dispensing into 96-, 384- and 1536-well shallow and deepwell plates.
- Pipetting volume range: Volumes can range from 20 nL-5 mL.
- Optional and upgradeable third arm labware movement
- Varispan arm: Sampling probes can vary in spacing from 9 mm to 20 mm for 4-tip arm or 9 mm to 40 mm for 8-tip arm allowing access to test tubes, microplates, deepwell plates, vials, etc. Varispan also ensures multi-tipped throughput regardless of the labware utilized.
- Accusense™ patented independent liquid level sensing: Accusense provides multichannel liquid level sensing technology to minimize sample volume requirements. Volumes of 50 µL can be detected in microplates and as low as 100 µL can be detected in test tubes. Low or nonionic polar solutions and organic solvents such as DMSO or methanol are also detectable.

- **Positioning reproducibility:** Enhanced design provides positioning accuracy and resolution for the Varispan arm, critical for standard 384-well microplate formats. The MDT arm provides pipetting capabilities in 96-, 384-, and 1536-well microplates.
- **Flexible deck layouts:** A unique modular deck tile concept enables flexible allocation of labware onto the deck surface. Predefined labware definitions simplify assay setup and enable labware definitions to remain independent of deck position.
- **Carry-over elimination:** A peristaltic pump provides high volume/high throughput sample tip washing for the reduction of carry-over to less than 1:1,000,000 with appropriate washing. Disposable tips are available for applications requiring improved elimination of carry-over. (See Options and accessories).
- **Expandable modular deck design:** The Integrator platform offers an extension of the system deck. The X travel of the arm extends beyond the boundaries of the central deck to accommodate the placement of external devices adjacent to the deck. Optionally, a right expansion module can be attached to the central deck for additional 6 MDT arm labware positions.
- **Flexible applications software:** The single WinPREP® application software is compatible with the Microsoft® Windows XP operating system.
- **Performance file library:** Optimization of pipetting performance is achieved via the automatic use of performance files containing information such as volume specific aspirate and dispense pump speeds, air gaps, liquid delays, waste and blowout volumes.



Figure 1. JANUS Varispan + MDT w/Gripper Integration Platform.

Precision liquid handling

The **Varispan arm** offers 5 µL < 2.0% C.V. (20 µL disposable tips, distilled water, 500 µL syringe) or 50 µL < 1% C.V. (fixed tips, distilled water, 500 µL syringe).

The **MDT arm** offers:

96-Channel Dispense Modules

- P235/96 MDT dispense head
 - Pipetting volume range 5-235 µL using P235 tips
 - 50 µl: < 1% CV
- P50/96 MDT dispense head
 - Pipetting volume range 0.5-50 µL using P50 tips or 0.5-20 µL using P20 tips
 - 5 µl: < 1% CV when using P50 tips
 - 1.0 µl: < 2% CV when using P20 tips

384-Channel Dispense Module

- P30/384 MDT dispense head
 - Pipetting volume range 0.5-30 µL using P30 tips or 0.5-10 µL using P10 tips
 - 1.0 µl: < 5% CV when using P30 or P10 tips

Options and accessories

JANUS offers many system options and accessories to enhance application requirements. Versatile labware configurations allow for combinations of test tubes, vials, microplates, deepwell plates, or troughs to be allocated on the work surface of the system. Different support tiles are available for specific assay needs and labware. In addition, racks can be placed at user's discretion within the working surface.

- **Multi-purpose support tiles:** These support tiles enable a single microplate, deepwell plate or micro-centrifuge tube rack to be accurately positioned on a JANUS deck.
- **Reagent reservoirs:** A variety of reagent reservoirs are available. Reagent can be stored in reagent troughs or gravity fed reagent bottles.
- **Wash station assemblies:** A variety of wash station assemblies are available. Multiple wash stations can be placed within a single deck layout.
- **Heating and cooling support tiles:** Peltier-based, single position tiles capable of heating and cooling microplates and tubes from 0 °C to 100 °C or individual plate adapter support tiles capable of heating a single standard microplate from ambient to 70 °C.

- **Shakers:** A single position orbital shaker or integrated DPC® MicroMix 5 shaker to mix samples or reagents in a variety of labware
- **PlateStak™ Integration:** PlateStak microplate/disposable tip rack storage system that can hold 50 standard or 15 deepwell microplates/disposable tip racks. Presents microplates/tip racks individually via a diving board that extends onto the JANUS deck.
- **QuickScan* positive sample identification:** Laser bar code reader scans 192 primary source tubes providing positive sample identification in less than one minute. (*QuickScan is available on the JANUS Expanded platform only).
- **Plate ID bar code scanner:** Laser bar code reader scans microplates using the integrated gripper arm, Gripper Integration Platform or MDT gripper option.
- **Vacuum Filtration Option** for vacuum based and magnetic bead based applications
- **Tipchute:** Teflon coated tipchute provides chute for automating the disposal of microplates, disposable tips, and tip boxes.
- **Enhanced Security Option:** 21CFR Part 11 Software Compliance option is available.
- **Septa-piercing tips:** Septa-piercing tips pierce through silicone rubber PTFE backed septa. Unique septa pierce racks are needed.

Deck capacities

JANUS Varispan + MDT is available in Standard, Integrator and Expanded platforms to allow for a choice of platform to meet capacity needs. The JANUS Varispan + MDT

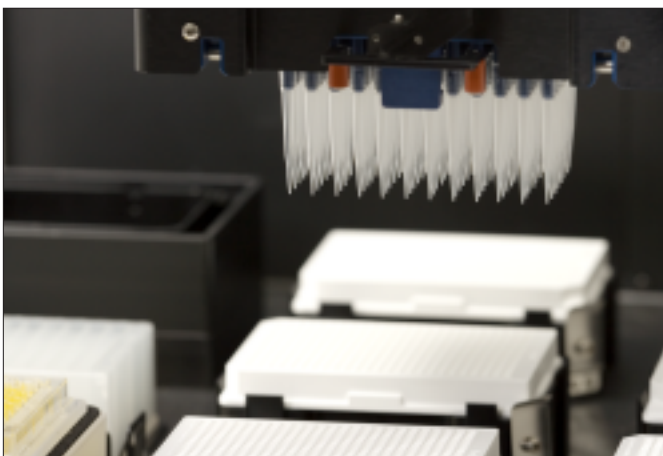


Figure 2. JANUS P235 MDT Dispense Head with MDT gripper option.

Integrator version provides capacity for 18 microplates with the option to expand to 24 microplates. The Standard and Expanded platforms offer 18 and 29 microplate positions, respectively, on the deck at one time. Other capacity requirements can be accommodated through the use of optional grid deck plates.

Arm accessories

Varispan Arm

- Fixed, Low Volume Fixed and Septa-piercing Tips
- **VersaTips:** A unique sampling tip that functions as a combined fixed, washable sampling tip and disposable tip adapter.
- **Disposable tips:** 20 µL, 200 µL and 1 mL, and 25 µL and 175 µL filter disposable tips. Tips are available in liquid sensing (conductive) and non-sensing (non-conductive) formats
- 250 µL, 500 µL, 1,000 µL, 2,500 µL, and 5,000 µL syringe options
- Test tube/vial racks
- Microfuge Tube Holders (0.5 mL and 1.5 mL)
- Six-way Valve

MDT Arm

- 96 tip P235 MDT head
- 96 tip P50 MDT head
- 384 tip P30 MDT head
- 384 tip P1 MDT NanoHead
- 384 tip P1 MDT Protein NanoHead
- **Disposable tips:** 96-channel P235, P50, P20 and 384 channel P30, P10 tips. Various tips are available in clear, black, filter, and sterile formats.
- Dispense Head Gripper Tool
- Auto Tip Load Station
- Dispense Head Docking Station
- 96/384 Tip Wash Station
- NanoHead Ultrasonic Tip Wash Station
- Reagent bottle cartridges
- Microplate and reagent chillers
- Vacuum Filtration Option
- 96-, 384- and 1536-channel Pintools
- 96-, 384-Pintool Wash Systems
- Air Compressor

Dimensions	Height, inches (mm)	Width, inches (mm)	Depth, inches (mm)
JANUS Varispan + MDT Standard platforms	44 inches (1118 mm)	47 inches (1194 mm)	32 inches (813 mm)
JANUS Varispan + MDT Integrator platforms	44 inches (1118 mm)	62 inches (1575 mm)	32 inches (813 mm)
JANUS Varispan + MDT Expanded platforms	44 inches (1118 mm)	62 inches (1575 mm)	32 inches (813 mm)

Weight (approximate)	Standard	Integrator	Expanded
JANUS Varispan + MDT Net weight	315 lb (143 kg)	335 lb (152 kg)	355 lb (161 kg)
JANUS Varispan + MDT Shipping weight	390 lb (177 kg)	410 lb (186 kg)	430 lb (195 kg)

Requirements

Electrical

- 100-130 Vac, 200-240 Vac 50/60 Hz; 800 VA
- Certifications CE, CSA

Environmental

- Operating ambient temperature: 59-95 °F (15-35 °C)
- Operating relative humidity: 60% to 80% at 85 °F (30 °C) non-condensing
- All Varispan + MDT systems require compressed air for proper system operation. This can be supplied via house air or an optional external air compressor supplied by PerkinElmer.
- Recommended Compressed Air Requirement: 110-145 psi (8-10 bar) at 2.0 cubic feet (56.6 L) per minute

Computer

Windows XP compatible computer with minimum:

- 2.8 GHz Pentium processor
- 256 MB RAM
- 40.0 GB hard drive
- one 3.5" 1.44 MB floppy disk drive
- 48X/32X/48X CDRW CD-ROM drive
- one available PCI slot
- SVGA color graphic adapter and color monitor (17" recommended)
- Windows XP operating system and Microsoft Office 2000

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