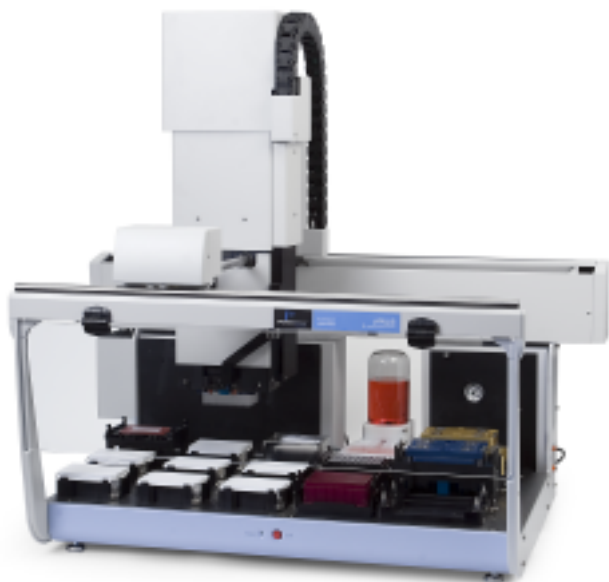


JANUS MDT Automated Workstation powered by Packard innovation



Introduction

The JANUS™ MDT Automated Workstation, the newest fully upgradeable platform from PerkinElmer, is a precision dispense and microplate handling system for liquid handling automation which utilizes the revolutionary Modular Dispense Technology™ (MDT) for interchangeable, hands-free switching of dispense heads without user intervention. The JANUS MDT Workstation can be configured with up to three 96- or 384-channel MDT dispense heads for dispensing into 96-, 384-, and high-density 1536-well plates to achieve a wide dynamic volume range for high-precision pipetting from 0.5 μ L – 235 μ L with disposable tips and dispense volumes as low as 20 nL using pintool technology. JANUS MDT's modular design automates plate movement both on the instrument platform and off the deck to ancillary devices. Increase throughput and flexibility by upgrading to a two arm workstation in a variety of combinations plus a third arm labware movement option in a space-efficient design.

The JANUS MDT is controlled by a Windows XP compatible computer with PerkinElmer® WinPREP software. In addition, the platform is available in four deck sizes for various capacity requirements: the Mini, the Standard, the Integrator, and the Expanded.

MDT arm dispense module

Three dispense head options are available to accommodate and optimize a variety of application requirements, including pipetting volume and microplate formats. The MDT arm provides X and Y axis speeds of 500 mm/sec and 320 mm/sec respectively. The system is capable of variable positioning in Z-axis with positional accuracy of 0.001-inch (0.025-mm). Each dispense head can be automatically interchanged in under 25 seconds using a power fail-safe interlocking mechanism. Active Identification provides automatic recognition of the head type, eliminating the need for user intervention by automatically applying head specific calibration parameters.

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

Deck capacities

JANUS + MDT is available in Mini, Standard, Integrator and Expanded platforms to allow for a choice of platform to meet capacity needs. The Mini, Standard and Expanded platforms offer 9, 15 and 21 microplate positions, respectively, on the deck at one time. The default JANUS + MDT Integrator version provides capacity for 15 microplates with the option to expand to 21 microplates. Other capacity requirements can be accommodated through the use of optional grid deck plates.

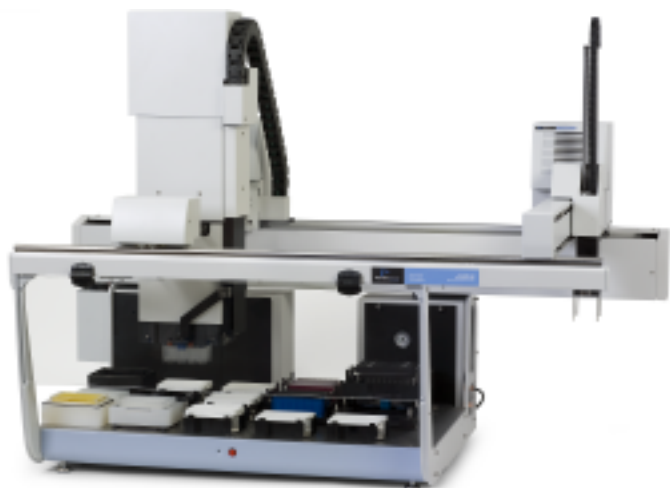


Figure 1. JANUS MDT Integrator with optional gripper arm.

Instrument features

Modular platform that enables upgradability to additional Varispan or plate movement arms

- MDT arm capable of movement in X, Y and Z directions
- Automated interchangeable head functionality
- 96-, 384- and 1536-well shallow and deepwell plate compatibility
- Pipetting volume range: Volumes can range from 20 nL-235 μL
- Positioning reproducibility: The MDT arm provides the positioning accuracy and resolution required for pipetting 96-, 384- and 1536-well microplates
- Carry-over elimination: Disposable tip options are available for applications requiring improved elimination of carry-over
- 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.
- 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.

Options and accessories

A wide range of deck accessories and options are available, providing the JANUS MDT with versatility to handle most liquid handling and sample preparation applications:

- MDT Dispense Heads: P235 MDT head (96 tip), P50 MDT head (96 tip), P30 MDT head (384 tip), MDT NanoHead (384 tip), MDT Protein NanoHead (384 tip)
- MDT Gripper Tool

- Heating and cooling support tiles: Peltier-based, single position tiles capable of heating and cooling microplates 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 that can be used to mix samples or reagents in a variety of labware
- Plate ID bar code scanner: Laser bar code reader scans microplates using the integrated gripper arm, the Gripper Integration Platform or MDT gripper options
- MDT Support Tiles: short, medium, tall, and extra tall
- MDT Auto Tip Load and Docking Stations
- Wash station assemblies: 96/384 Wash, NanoHead Ultrasonic Wash, and 96-, 384-Pintool Wash assemblies are available
- Tipchute: Teflon® coated tipchute provides chute for automating the disposal of microplates, disposable tips, and tip boxes
- Microplate and reagent chillers
- Vacuum Filtration Option for vacuum-based and magnetic bead based applications
- 1 L Reagent Bottle Cartridges
- 96-, 384- and 1536-Channel Pintools
- PlateStak™ Integration: PlateStak microplate/disposable tip rack storage system that can hold 50 standard or 15



Figure 2. JANUS Mini with PlateStak

deepwell microplates/disposable tip racks and presents microplates/tip racks individually by a diving board that extends onto the JANUS deck

- Enhanced Security Option: 21 CFR Part 11 Software Compliance option is available
- Expansion module: Available on the Integrator platform for increased capacity

Dimensions	Height, inches (mm)	Width, inches (mm)	Depth, inches (mm)
JANUS MDT Standard platform	44 inches (1118 mm)	47 inches (1194 mm)	32 inches (813 mm)
JANUS MDT Integrator and Expanded platform	44 inches (1118 mm)	62 inches (1575 mm)	32 inches (813 mm)
JANUS MDT Mini platform	44 inches (1118 mm)	30 inches (762 mm)	32 inches (813 mm)

Weight (approximate)	Mini	Standard	Integrator	Expanded
JANUS MDT Net weight	195 lb (88 kg)	235 lb (107 kg)	255 lb (116 kg)	275 lb (125 kg)
JANUS MDT Shipping weight	270 lb (112 kg)	310 lb (141 kg)	330 lb (150 kg)	350 lb (159 kg)

Requirements

Electrical

- 110-120 volts AC 50/60 Hz; 200-230 volts AC 50 Hz; 230 Watts
- 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 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:

- 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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