20 year ANNIVERSARY

Mitutoyo VMU and WDI

Modular Microscope System Integration

WDI
WISE DEVICE INC

is a world leader in the design, manufacture and integration of OEM and complete microscopy automation solutions for the biomedical, metrology, electronics, semiconductor, and flat panel display markets.

NEXT GENERATION INNOVATION

WDI designs and manufactures advanced OEM automated microscopes and precision automation components for high-performance industrial inspection and imaging applications.

By integrating Mitutoyo Video Microscope Unit (VMU) models with WDI automation components, simple imaging systems can be transformed into advanced microscopy automation solutions with improved performance, reliability, and scalability for a wide range of applications.

- ✓ PFA-LN autofocus sensors featuring upgraded and improved optics, imaging, processing and communication hardware and capabilities
- ✓ Improved communication between components increases reliability, speed and ease of integration
- ✓ WDI components have integrated controllers eliminating external devices and messy cabling
- ✓ Gigabit Ethernet communication provides greater reliability, speed and enhanced capabilities such as diagnostic and performance reporting and real-time analytic and statistical metrics

WIDE VMU HR with PFA- LN + Z-Axis Stage + 1.5 A Illluminator

FEATURES & BENEFITS

Speed

A 3 KHz standard sample rate, up to 5 KHz in SWIFT Mode, improved processing power, memory and FPGA, coupled with Gigabit Ethernet communication create the fastest most flexible microscopy autofocus solution available today.

Accuracy

A new imaging sensor and algorithms provide autofocus accuracy to less than 0.25 of the objective DOF. New Multi -Segment Processing ensures autofocus performance for complex, patterned and multi surface applications.

Integration

Simple optical alignment features, higher power, and enhanced laser shaping make PFA-LN easier to integrate optically and mechanically. An easy to use software application and SDK make integration straight forward.

Flexibility

WDI automation components, including Z-axis stages, illuminators and linear lens changers can be integrated with or without laser autofocus. WDI components can interface with all VMU models.

MODULAR MICROSCOPE COMPONENTS

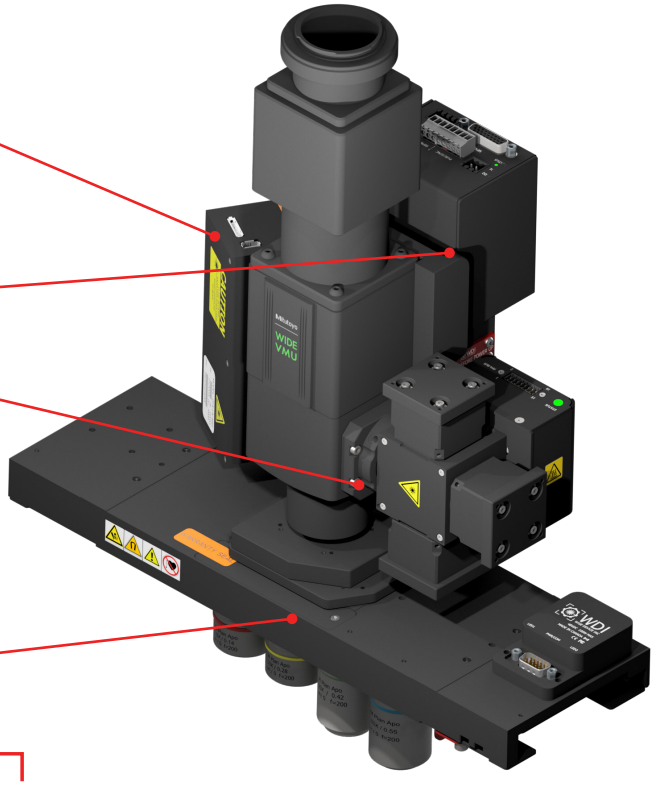
Various WDI components compatible with Mitutoyo VMU* models can be integrated in a compact configuration, allowing flexible system customization and modular functionality based on application requirements.

PFA-LN Autofocus Sensor
The PFA-LN sensor, available in 450, 660, 785 and 850 nm wavelengths, now acts as the central controller with support for WDI's Z-Axis stages, LLC Linear Lens Changers and two 1.5 Amp LEDs or one 3 Amp HPLED.

Z-Axis Stage
Control and communication are now integrated into a single unit Z-axis stage. With improved microstepping and a resolution down to 40 nm, they may be used in single or multi-objective applications.

Coaxial Illuminators
For coaxial reflected light illumination, systems may be equipped with a long life 1.5 Amp or 3 Amp LED, both directly powered and controlled by Z-stage. An optional 5 Amp HPLED and Fast Pulse RGB Illuminators are also available for continuous scanning applications.

Linear Lens Changers
Control and communication are now integrated into lens changers. The physical controller can be attached or separated if space is constrained. Various lens changer models and selectable inserts supporting from 2 to 5 objectives are available.



WDI & VMU EXAMPLE CONFIGURATIONS

Wide VMU

- ✓ PFA-LN Autofocus Sensor
- ✓ iZAA-W VMUV Z-Axis Stage
- ✓ PBI-HPLED5 WHITE ILLUMINATOR

Wide VMU HR

- ✓ PFA-LN Autofocus Sensor
- ✓ iZAA-W VMUV Z-Axis Stage
- ✓ WLED1.5 White Illuminator
- ✓ LLC2 Linear Lens Changer

Wide VMU HR

- ✓ PFA-LN Autofocus Sensor
- ✓ iZAA-W VMUV Z-Axis Stage
- ✓ Visible & Broadband SWIR Illuminator

SWIR

Wide VMU HR

- ✓ PFA-LN Autofocus Sensor
- ✓ iZAA-W VMUV Z-Axis Stage
- ✓ RGB-FPHPLED Illuminator
- ✓ iLLC-SM Linear Lens Changer

VMU MMS COMPONENT SPECIFICATIONS

PFA-LN Autofocus Sensor**	Value				Feature	Value
Structured Light Pattern	Line				IEC Certification	61326-1, 61010-1 and 60825-1
Laser Wavelengths Available	450	660	785	850 nm	PC Communication	Gigabit Ethernet, RS485
Typical Output Power	1.1	1.1	0.9	1.1 mW	Sampling Rate	Up to 3kHz (SWIFT 5 kHz)
Laser Classification	Class 3R				Static Autofocus Repeatability	± 0.25 Objective DOF or better
Standoff Distance	300 mm maximum				Tracking Autofocus	± 0.33 Objective DOF or better

Linear Lens Changer	LLC2	LLC3	iLLC-SM
Maximum # of Objectives	2	3	3 to 5
Objectives Supported	Typically Mitutoyo***		Mitutoyo, Olympus, Zeiss, Nikon, Leica, mag.x
Motion Type	Direct Drive Linear Motor		
Encoder	Linear Incremental Optical Encoder 78 nm Resolution		
Positioning Repeatability	+/-0.25µm		
Bearings	High Precision Crossed-Roller with Anti-Creep		

SWIR & Visible LED Illuminators	Visible WLED1.5	Visible WLED3	Single SWIR	Single SWIR & Visible	Broadband SWIR	Broadband SWIR & Visible
# of Channels	1			2	1	2
Wavelength Options	White (Others avaliable upon request)		1150, 1200,1300, 1370, 1450, 1550 nm		Approximately 1150 to 1650 nm	
Maximum Current	1.5 A	3 A	1.5 A per Channel			
Compatible Controllers	iZAA/iZPS Stages, CTR-AFML, CTR-ML and compatible standalone controllers					
Controller Operating Modes	Continuous, Pulse Width Modulation, Pulse Follow, Pulse Trigger					

Integrated Z-Stages	iZAA-WVMUV
Objectives/Compatible Lens Changers	Single Objective or LLC2, LLC3, iLLC-SM, sLLC-SM, 3rd Party Rotary Turrets
Motion Type	2 Phase Stepper with Integrated Motion and Illumiantion Controller
Travel Range	10 mm (± 5mm)
Minimum Incremental Motion	39 nm/step with 1/64 microstepping
Maximum Speed	10 mm/s
Maximum Acceleration	120 mm/s^2
Micro Stepping	2, 4, 8, 16, 32, 64,128, or 256
Maximum Load	3.5 kg
Illuminator Support	Two 1.5 A or One 3 A LED Illuminator

**Avaliable for Standard, Wide & WIDE VMU HR.*
***Customizable Configuration based on order and other configuration avaliable with or without autofoucs sensor.*
**** Thread adapters are available for conversion to other threads. Custom inserts are available upon request.*

WDI is a world leader in the design, manufacture, and integration of OEM and complete microscopy automation solutions for the biomedical, metrology, electronics, semiconductor, and flat panel display markets. WDI's success lies in an innovative culture and ability to optimize and adapt our technology to customers' specific requirements by listening to their needs and gaining a deep understanding of their processes, applications and goals. WDI employs over 70 optical, electrical, mechanical and software engineers, as well as scientists, who are dedicated to servicing our customers. Contact WDI today to see how we can help solve your microscopy automation needs.

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