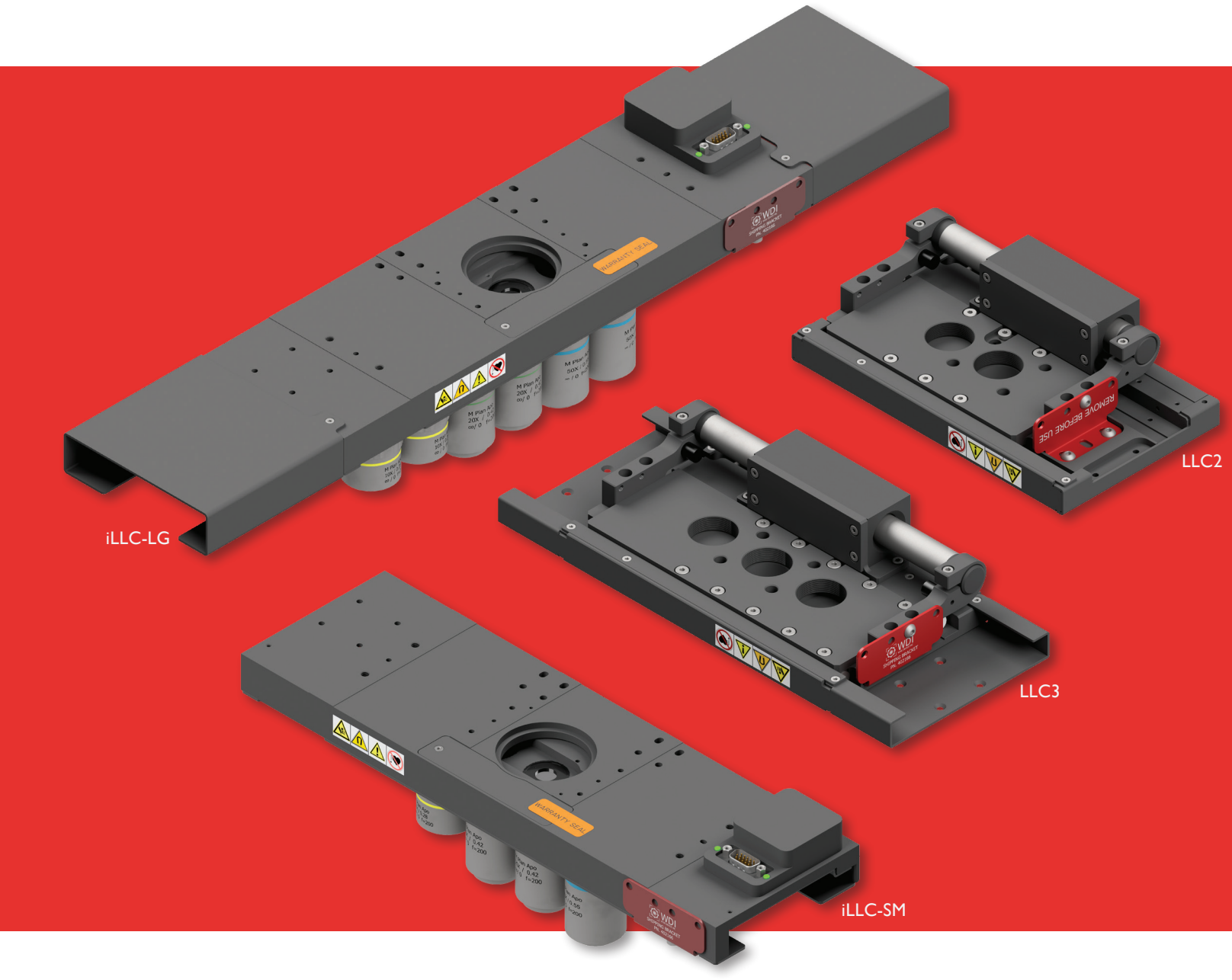
NEW

20 year ANNIVERSARY

Linear Lens Changers

Accurate, Fast, and Repeatable Motorized Lens Selection



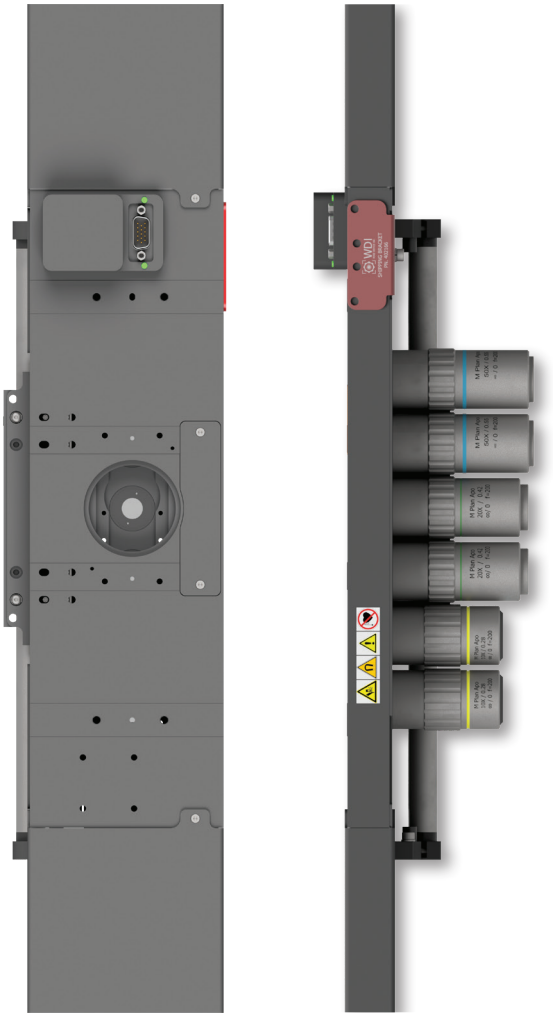
WDI
WISE DEVICE INC

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 LENS CHANGERS

Introducing the all-new iLLC, sLLC, and LLC2/3, the next generation of WDI's innovative Linear Lens Changers. Each LLC is equipped with a high resolution optical incremental encoder for unparalleled accuracy and repeatability. iLLC models include a low-profile integrated controller. All components provide exceptional reliability and performance at a significant cost reduction compared to traditional lens changers.

- ✓ New state-of-the-art digital servo controller provides enhanced performance while reducing overall cost
- ✓ Featuring a high-resolution optical encoder which ensures precision and accuracy with ±0.16 µm repeatability
- ✓ iLLC and sLLC models support almost all objectives including Mitutoyo, Olympus, Zeiss, Nikon, Leica, and mag.x by using modular inserts
- ✓ Compatible with WDI PFA-DT/LN Modular Microscope Systems (MMS) as well as standalone applications
- ✓ Separated controller models available to provide mechanical clearance where needed



iLLC-LG

FEATURES & BENEFITS

Accuracy

Now featuring a high resolution optical encoder, coupled with an advanced digital servo controller, the LLC series products can achieve unmatched accuracy and precision. The high precision bearing provides lateral stability while allowing fast positioning of objectives with ±0.16 µm repeatability.

Speed

WDI designed the LLC product line with speed in mind. The iLLC, sLLC, LLC2, and LLC3 models feature a direct drive linear motor allowing for rapid objective lens change. All models feature shaft linear motors which can change between nearby lenses in as fast as 0.3 seconds.

Flexibility

With integrated and separated options, the LLC can be used standalone or integrated in a WDI Modular Microscope System with autofocus sensor with ease. Objective inserts and use of thread adapters allow for unprecedented flexibility making LLC's compatible with almost all objective lenses on the market.

Communication

All new LLC's use CAN or serial RS485 communication protocols which provides greater speed, reliability and robustness as well as improved remote monitoring and system diagnostics. With a new user interface and support for existing SDK's, the lens changers can readily be used in variety of applications.

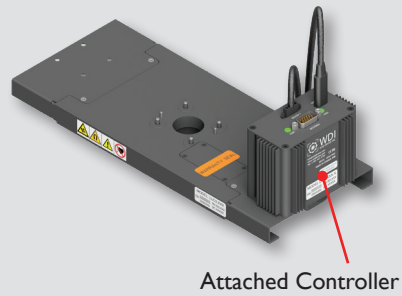
USE IN MODULAR MICROSCOPE SYSTEM

Flexible Controller Option

Control and communication electronics have been redesigned to allow flexible configurations in a wide range of applications. The controller can be integrated (iLLC), attached (LLC3), or separated (sLLC, LLC2, and LLC3) depending on space and integration requirements. Dedicated cables for encoder and motor connections are provided with separated controller options.

iLLC-SM

sLLC-SM

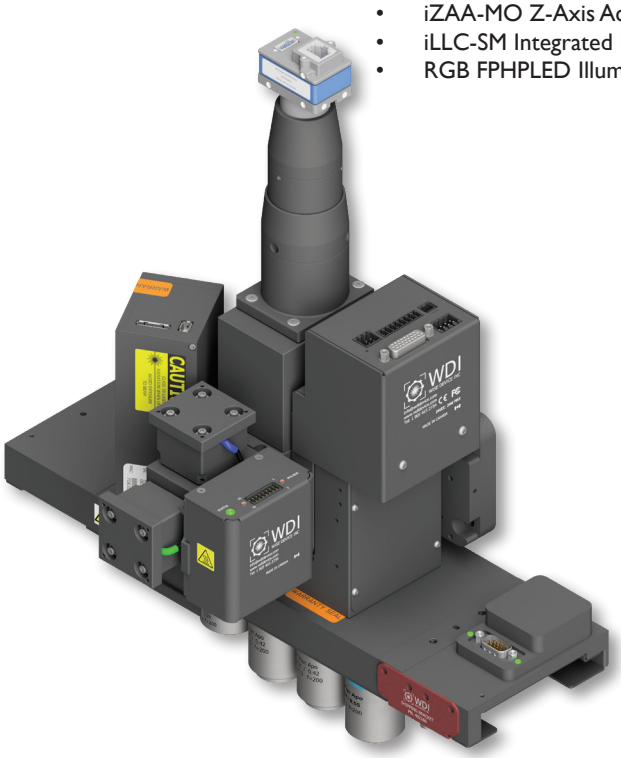


LLC3 w/ CTR-LLC-A

MODULAR MICROSCOPE SYSTEM (MMS) CONFIGURATIONS

Multi-Objective System

- WDI High Resolution MMS
- PFA-LN Autofocus Sensor
- iZAA-MO Z-Axis Actuator
- iLLC-SM Integrated Lens Changer Small
- RGB FPHPLED Illuminator



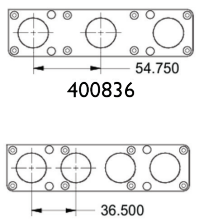
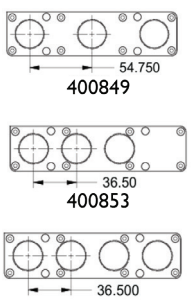
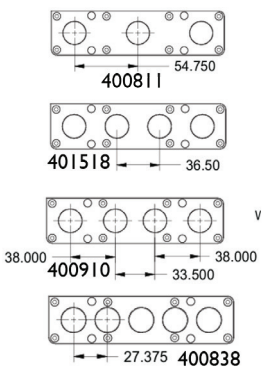
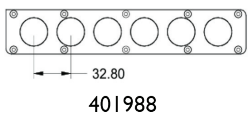
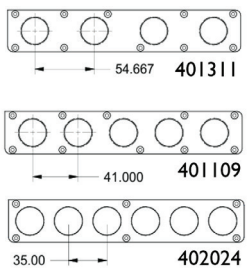
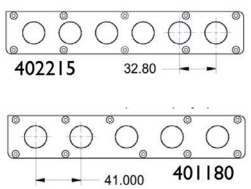
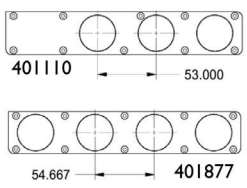
Multi-Objective System

- WDI High Resolution MMS
- PFA-DT Autofocus Sensor
- iZAA-MO Z-Axis Actuator
- LLC3 Linear Lens Changer w/ Attached Controller (CTR-LLC-A)
- PBI-ILL-WLED1.5 Illuminator

LENS CHANGER SPECIFICATIONS

Parameter	LLC2	LLC3	iLLC-SM	iLLC-LG
Maximum # of Objectives	2	3	3 to 5	3 to 6
Standard Objective Thread[1]	M26x36TPI		Multiple (See Table Below)	
Objectives Supported	Typically Mitutoyo[1]		Mitutoyo, Olympus, Zeiss, Nikon, Leica, mag.x, etc	
Motion Type	Direct Drive Linear Motor			
Encoder	Linear Incremental Optical Encoder 78 nm Resolution			
Positioning Repeatability	±0.25 µm			
Minimum Lens Change Speed[2]	0.4 s (35 mm spacing)	Adjacent: 0.4 s First-to-Last: 0.5 s (38 mm spacing)	Adjacent: 0.5 s First-to-Last: 0.65 s	Adjacent: 0.6 s First-to-Last: 1 s
Bearings	High Precision Crossed-Roller with Anti-Creep			
Compliance	Clean Room Class 1000 (ISO 6)			
Maximum Acceleration / Deceleration	8500 mm/s² / 8500 mm/s²			
Maximum Speed	700 mm/s			
Weight (excluding inserts and objectives)	1.3 kg	1.8 kg	1.9 kg	2.75 kg
Maximum Recommended Load	0.6 kg	0.95 kg	1.3 kg	2.0 kg
Available Models	LLC2 w/ Separated Controller	LLC3 w/ Separated Controller LLC3 w/ Attached Controller	iLLC-SM (Integrated Controller) sLLC-SM (Separated Controller)	iLLC-LG (Integrated Controller) sLLC-LG (Separated Controller)

STANDARD OBJECTIVE INSERTS[1] (iLLC AND sLLC MODELS)

Thread Objective	M25x0.75 Nikon	M26x36TPI Mitutoyo	W0.8"-36 (RMS) Olympus	M34x0.75 mag.x
iLLC-SM/sLLC-SM Compatible Inserts				Not Compatible
iLLC-LG/sLLC-LG Compatible Inserts				

[1] *Thread adapters are available for conversion to other threads. Custom inserts are available upon request.*
[2] *Measured with LLC fully loaded, default parameters, and 48 VDC power. Lower voltage may increase lens change times.*

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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