

ZAA STPI

HYBRID Z AXIS ACTUATOR WITH STEPPER & PIEZO MOTION

Z axis motion actuator featuring
integrated stepper and piezo electric
motors fast high resolution focus

New



A Hybrid Stepper & Piezo Actuator

Many modern inspection and laser machining systems require an extremely high resolution and fast Z axis actuator which also provides long overall travel distance. To meet this requirement WDI has integrated two motion technologies into the first “Hybrid” Z Axis actuator, the ZAA STPI. By combining both stepper and piezo motion the ZAA STPI offers all the benefits of a piezo actuator; including nanometer resolution, rapid response and smooth motion, with the long travel distance of a stepper motor.

Fast Accurate Automated Focus

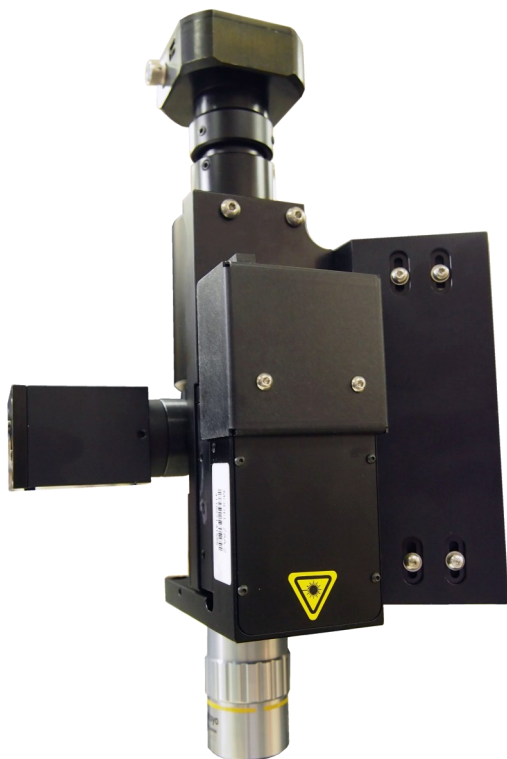
The ZAA STPI seamlessly integrates with WDI's Autofocus (ATF) Sensor technology to create a fast, high resolution, smooth imaging system that can be used in a wide variety of manufacturing applications including semiconductor, FPD, OLED, packaging and photovoltaic and solar panel inspection. By directly integrating the ZAA STPI with the ATF controller the system is able to seamlessly switch between stepper and piezo motors, depending on whether the surface target is far or near to optimal focus. The ZAA STPI also automatically resets the piezo to the midpoint of its travel range while the stepper is engaged to ensure it will have its maximum traveling range in both directions when it is activated.

Practical Design

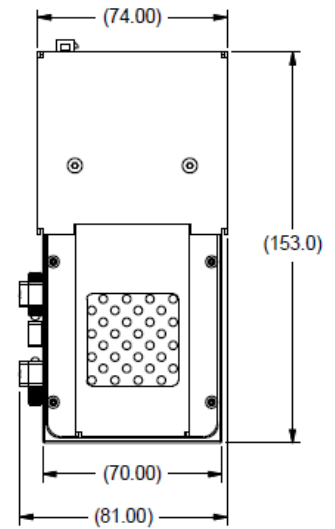
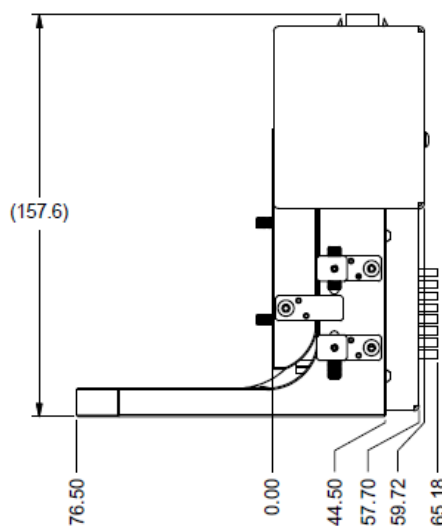
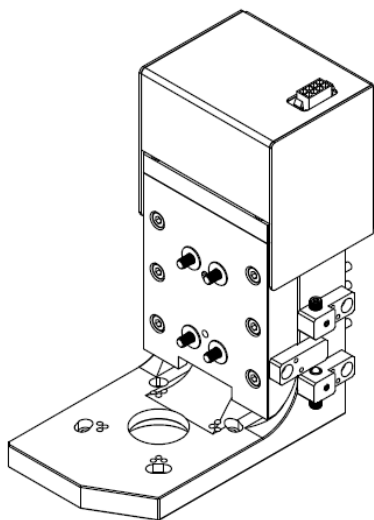
To meet the requirements of inline manufacturing and high speed target tracking the ZAA STPI has been designed with a strong, rigid structure to minimize the effect of system vibration. By integrating a piezo amplifier within its body the ZAA STPI also eliminates excess cabling and external high voltage connections while minimizing the overall footprint of the unit. Furthermore, the ZAA STPI can operate in three different modes; single mode stepper, single mode piezo or hybrid mode, allowing it to adapt easily to different applications. Finally, the ZAA STPI can be equipped with optional “hard stops” to prevent damage to sensitive samples when short working distance objectives are used.

Cost Effective

The ZAA STPI can accommodate all major objectives lens types and manufacturers as a single lens solution. It is also able to support WDI's Linear Lens Changer for up to four objectives. This makes the ZAA STPI very cost effective over traditional piezo focus systems which often require a dedicated piezo focus device and amplifier for each objective.



Parameters	ZAA-STPI	
Motion Type	Stepper Motor	Piezo Motor
Travel Stroke	6mm (±3mm)	85um
Max Speed	10 mm/s	20 mm/s
Max Acceleration	100 mm/s ²	500 mm/s ²
Max Resolution	0.156µm/step	30nm
Positional Feedback	WDI ATF Sensor—ATF4, ATF5, ATF6, ATF7	
Max Load	3.5kg	
Lens Configuration	Single Objective or WDI LLC2, LLC3, LLC4	
Motion Controller	MCZ or MFC	
Input Voltage	24VDC to 30VCD	
Maximum Input Current	2.5A	
Ambient Operating Temperature	18°C to 35°C	
Storage Temperature	10°C to 45°C	
Humidity	10% to 75%	



is a world leader in the manufacturing and integration of industrial autofocus sensors and microscopy automation solutions for the biomedical, metrology, electronics, semiconductor and laser markets. WDI's success lies in an innovative culture and ability to optimize and adapt our technology to a customers' specific requirements. WDI employs over 20 optical, electrical, mechanical and software engineers as well as scientists who are dedicated to servicing our customers. We have locations in Canada and Poland, as well as service centers in Taiwan and South Korea. Contact WDI today to see how we can help solve your microscopy automation needs.