



Intelligent AOI Sensor Service Provider



en.dayoptics.com

HO

Hunan Dayoptics, Inc

008#, Jinshui West Road, Ningxiang Jinzhou New District,
Changsha(410600), Hunan, China

0731-87051588

BO

Fujian Dayoptics, Inc

Building 6, No. 66 Anxia Road, Nanyu Gaoqi Industrial Park,
Fuzhou High-tech Zone, Fuzhou, Fujian 350109, China

0591-83218681



V2503

About DayOptics



Founded in 2013

Extensive experience in the optics industry



Provider of Intelligent AOI Optical Modules

Customized Optical Solutions



DayOptics Philosophy

To Simplify and Beautify Optical Making

Product Vision

Continuously uncover technical demands, delve into module applications, and accumulate industry experience. Optimize and iterate universal technologies while focusing on providing customers with one-stop "Optics, Mechanics, Electronics, Computing, and Software" solutions. Dedicated to becoming a cost-effective core module provider.



AOI intelligent Optoelectronic Sensor Product Matrix



Strategic Layout



> Standard Product Numbering

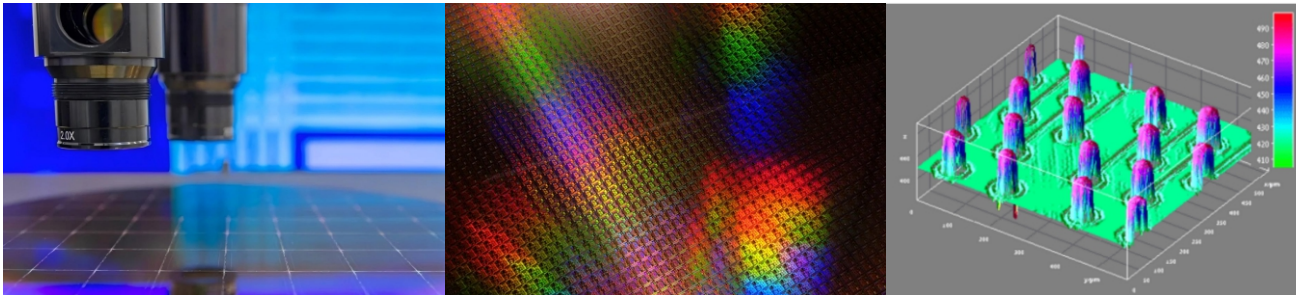
3D White Light Triangulation Sensor						
DS-Prefix	3D-Type	Light Line Length	Light Line Width	Light Source Power	Imaging Objective (Supports dual objectives)	Matching Camera
		5mm=1	5um=1	140W=1	2x=1	Single Camera=1
		10mm=2	10um=2	240W=2	5x=2	Dual Camera=2
		20mm=3	15um=3	300W=3	10x=3	
		Custom=4	20um=4	420W=4	20x=4	
			Custom=5	560W=5	50x=5	
				Custom=6	100X=6	
					2x HR=7	
					5x HR=8	
					10x HR=9	
					20x HR=A	
					50x HR=B	
					100x HR=C	

> Main Features

- High uniformity projection and imaging units, supporting customization of the entire hardware platform;
- Uses incoherent white light source, avoiding noise caused by interference phenomena from coherent light sources like lasers;
- Projection and imaging units configured at specific angles to enhance imaging signal strength;
- Extremely low exposure time (min. 1μs), very high scanning speed (max. 500mm/s), significantly improving WPH (Throughput);
- Automatic switching of multiple magnification objectives, meeting different height and precision measurement requirements;

> Product Applications

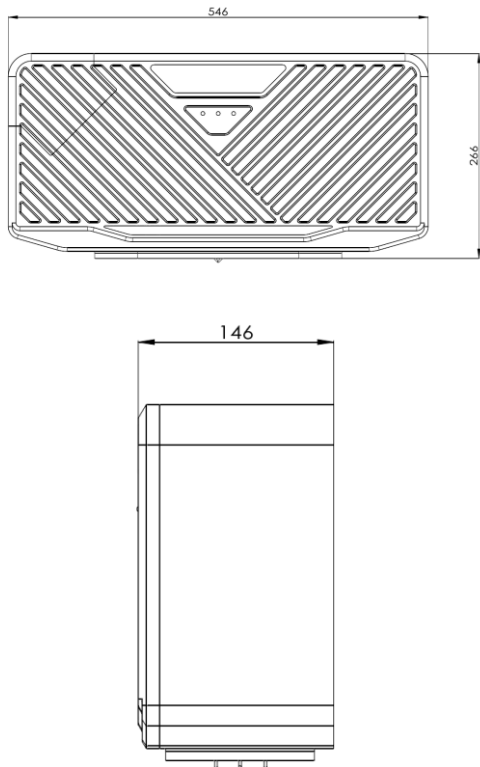
- Suitable for types such as copper pillars, plating, gold bumps, micro bumps, etc. Capable of bump height measurement, coplanarity, PR/PI thickness measurement, through-hole depth measurement, and multi-surface measurement.
- Applicable to industries like semiconductors, ICs, and new energy.



> Parameter Specifications

Item	Parameter
Measurement Range (μm)	10-300
Height Resolution (μm, 5X, Std. Config.)	0.05
Height Measurement Accuracy (μm, 5X, Std. Config.)	±1%
Height Repeatability (μm, 5X, 0, 50μm, Std. Config.)	<0.15
X-Axis Resolution (μm, 5X, Std. Config.)	>0.05
Z-Axis Resolution (μm, 5X, Std. Config.)	>0.03
Projection Light Source Power (W)	200 (Standard) 700 (Max.)
Projection Light Line Width (μm)	5 (Min.) 10 (Standard)
Projection Light Line Length (mm)	5 (Standard) 20 (Max.)
Projection Light Line Uniformity	>90%
Number of Objective Configurations	1 (Standard, 5x) 4 (Max., [5x, 10x, 20x, 50x])
Communication Method	Gigabit Ethernet (Camera) RS485 (Light Source) 24V TTL (Sync Signal)
Power Supply Parameters	220V, 50Hz, 300W (Standard) 220V, 50Hz, 800W (Max.)
Operating Temperature (°C)	10~35
Storage Temperature (°C)	-20~60
Weight	~20KG
Mounting Method	Includes a separate adapter plate for compatibility with system mounting holes.

> Typical Package Schematic(mm)



Intelligent Focusing Imaging Sensor

Standard Product Numbering

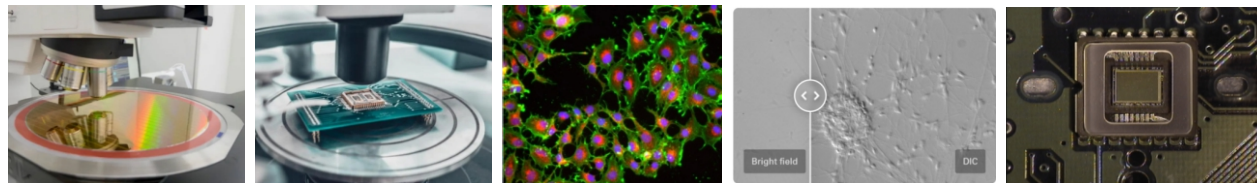
Intelligent Focusing Imaging Sensor							
DS-Prefix	2D-Type	M* Microscope Module Type See Selection Guide for Details	L*- Light Source Category See Selection Guide for Details	Camera Interface	AF Module	Objective Drive	Motor Type
				C-mount=1	None=0	Single Objective=1	None=0
				CS-mount=2	Self-developed=1	Small Z-Driver=2	Lead Screw Motor=1
				M58 Thread=3	MSG=2	Objective Turret - Linear=3	Linear Motor=2
				Custom=4	WDI=3	Objective Turret - Rotary=4	External Brand=3
						Custom=5	

Microscope Module							
DS-Prefix	MM-Type	Tube Lens Focal Length	Target Size	Illumination Function	AF Function	Polarization and DIC Function	Dual Camera Function
		180mm=1	16mm=1	None=0	None=0	None=0	None=0
		200mm=2	30mm=2	Yes=1	Yes=1	Polarization only, no DIC=1	Yes=1
		Custom=3	32mm=3			DIC only, no Polarization=2	
			40mm=4			Polarization and DIC=3	
			44mm=5				
			Custom=6				

Light Source							
DS-Prefix	LS-Type	Light Source Type	Light Source Power	Color	Filter		
		Point Source=1	<10W=1	White=1	Configured as required		
		Digital Fiber Light=2	140W=2	Red=2			
		Laser Source=3	240W=3	Green=3			
			300W=4	Blue=4			
			Custom=5	Custom=5			

Product Applications

- Semiconductor: Wafer manufacturing/inspection, chip packaging inspection, bonding inspection.
- Display Panel: Manufacturing defects, contamination inspection.
- Industrial/Electronics: Precise inspection of tiny components and circuits on PCBs.
- Medical Devices: Automated microscope observation scenarios.



Intelligent Focusing Imaging Sensor(Default Configuration 1)



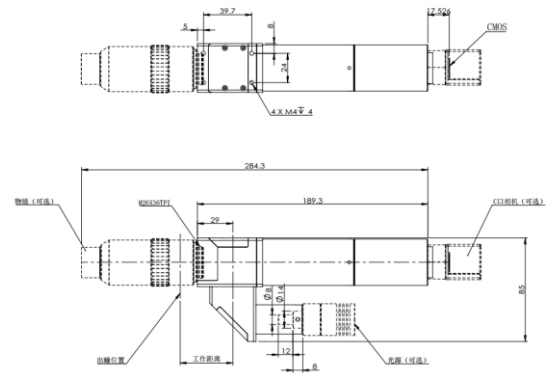
Main Features

- Microscopic imaging supporting $\leq 16\text{mm}$ target surface.
- Uses coaxial Köhler illumination with high uniformity (≥ 0.9).
- Supports interfaces for expanding with laser light source, laser focus sensor, darkfield illumination, etc.
- Supports customer customization.

Parameter Specifications

Item	Parameter	
Model (Standard)	DS-2D-M1L1-1010	
Microscope Module	Model	DS-MM-211-000
	Magnification	1X
	Correction Wavelength	Visible Light
	Focal Length (mm)	200
	Polarization Function	Optional
	Auto Focus Function	Optional
	Weight (g)	~550
	Illumination Method	Köhler Illumination
Light Source (Optional)	Working Distance (mm)	≤ 45
	Point Light Source	Power, Color Optional
Camera (Optional)	Digital Fiber Light Source	
	Interface Type	C-mount/CS-mount
Objective (Optional)	Target Size (mm)	≤ 16
	Thread Interface	M26 $\times$ 0.706 (Supports Customization)
	Exit Pupil Position (mm)	≤ 15
Focus Solution*	Example	Mitutoyo MPlan APO Series
	Focus Method	Manual Focus or Image Auto-Focus
	Drive Method	Entire Sensor Movement or Sample Movement
Operating Temperature	10°C~35°C	
Storage Temperature	-20°C~60°C	

Typical Package Schematic(mm)



Intelligent Focusing Imaging Sensor (Default Configuration 2)



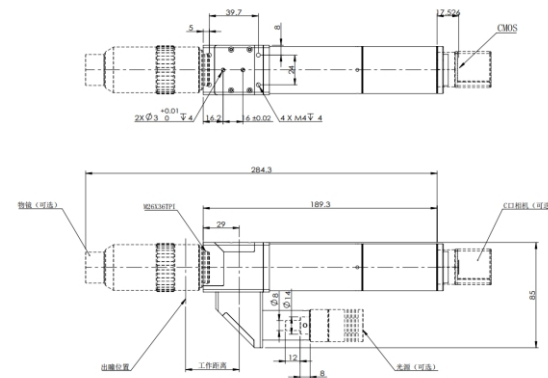
> Main Features

- Microscopic imaging supporting $\leq 30\text{mm}$ target surface.
- Uses coaxial Köhler illumination with high uniformity (≥ 0.9).
- Supports interfaces for expanding with laser light source, darkfield illumination, etc.
- Supports customer customization.

> Parameter Specifications

Item	Parameter
Model (Standard)	DS-2D-M2L1-3010
Microscope Module	Model
	DS-MM-221-000
	Magnification
	1X
	Correction Wavelength
	Visible Light
Light Source (Optional)	Focal Length (mm)
	200
	Polarization Function
	Optional
	Weight (g)
Camera (Optional)	~750
	Illumination Method
	Köhler Illumination
	Working Distance (mm)
	≤ 45
Objective (Optional)	Point Light Source
	Power, Color Optional
Focus Solution*	Digital Fiber Light Source
	Interface Type
Operating Temperature	M-mount/F-mount/C-mount/CS-mount Optional
	Target Size (mm)
Storage Temperature	≤ 30
	Thread Interface
	M26x0.706 (Supports Customization)
	Exit Pupil Position (mm)
	≤ 15
	Example
	Mitutoyo MPlan APO Series
	Focus Method
	Manual Focus or Image Auto-Focus
	Drive Method
	Entire Sensor Movement or Sample Movement
	Operating Temperature
	10°C~35°C
	Storage Temperature
	-20°C~60°C

> Typical Package Schematic(mm)



Intelligent Focusing Imaging Sensor (Default Configuration 3)



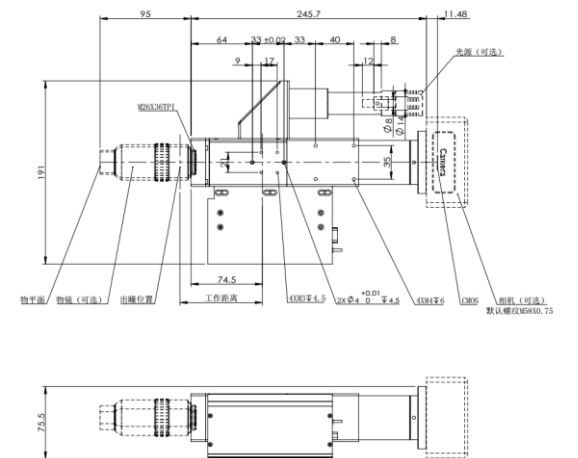
> Main Features

- Microscopic imaging supporting $\leq 30\text{mm}$ target surface.
- Uses coaxial Köhler illumination with high uniformity (≥ 0.9).
- Supports interfaces for expanding with laser light source, darkfield illumination, etc.
- Equipped with laser auto-focus sensor for fast focusing.
- Supports customer customization.

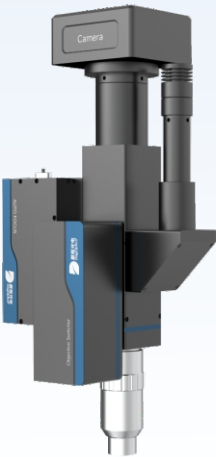
> Parameter Specifications

Item	Parameter
Model (Standard)	DS-2D-M3L1-3110
Microscope Module	Model
	DS-MM-221-100
	Magnification
	1X
	Focal Length (mm)
	Visible Light
Light Source (Optional)	Correction Wavelength
	200
	Weight (g)
	Optional
	Illumination Method
Camera (Optional)	~700
	Working Distance (mm)
	Köhler Illumination
	Polarization Function
	≤ 90
Objective (Optional)	Point Light Source
	Power, Color Optional
Focus Solution*	Digital Fiber Light Source
	Interface Type
Operating Temperature	M-mount/F-mount/C-mount/CS-mount Optional
	Target Size (mm)
Storage Temperature	≤ 30
	Thread Interface
	M26 × 0.706 (Supports Customization)
	Exit Pupil Position (mm)
	≤ 15
	Example
	Mitutoyo MPlan APO Series
	Focus Method
	Laser Auto Focus
	Drive Method
	Entire Sensor Movement or Sample Movement
	Operating Temperature
	10°C~35°C
	Storage Temperature
	-20°C~60°C

> Typical Package Schematic(mm)



Intelligent Focusing Imaging Sensor (Default Configuration 4)



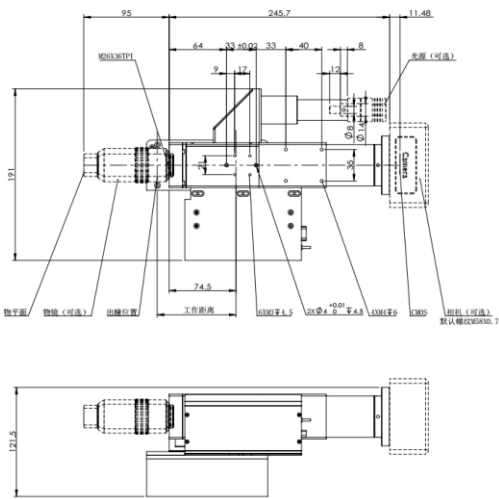
Main Features

- Microscopic imaging supporting $\leq 30\text{mm}$ target surface.
- Uses coaxial Köhler illumination with high uniformity (≥ 0.9).
- Equipped with laser auto-focus sensor for fast focusing.
- Equipped with small Z-axis drive motor, control accuracy up to sub-micron level.
- Supports customer customization.

Parameter Specifications

Item	Parameter
Model (Standard)	DS-2D-M3L1-3121
Microscope Module	Model
	DS-MM-221-100
	Magnification
	1X
	Correction Wavelength
	Visible Light
	Focal Length (mm)
Light Source (Optional)	200
	Polarization Function
	Optional
	Weight(g)
	~700
	Illumination Method
	Köhler Illumination
Camera (Optional)	Working Distance (mm)
	≤ 90
Objective (Optional)	Point Light Source
	Power, Color Optional
Focus Solution	Digital Fiber Light Source
	M-mount/F-mount/C-mount/CS-mount Optional
Operating Temperature	Interface Type
	M-mount/F-mount/C-mount/CS-mount Optional
Storage Temperature	Target Size (mm)
	≤ 30
	Thread Interface
	M26 x0.706 (Supports Customization)
	Exit Pupil Position (mm)
	≤ 15
	Example
	Mitutoyo M Plan APO Series
	Focus Method
	Laser Auto Focus
	Drive Method
	Objective Movement
	Drive Motor
	Lead Screw Motor or Linear Motor
	Operating Temperature
	10°C~35°C
	Storage Temperature
	-20°C~60°C

Typical Package Schematic(mm)



Intelligent Focusing Imaging Sensor (Default Configuration 5)



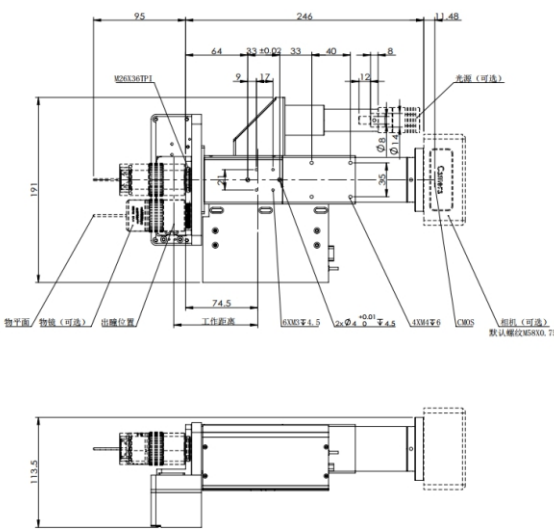
Main Features

- Microscopic imaging supporting $\leq 30\text{mm}$ target surface.
- Uses coaxial Köhler illumination with high uniformity (≥ 0.9).
- Equipped with laser auto-focus sensor for fast focusing.
- Equipped with objective turret, supports multi-magnification switching, control accuracy up to micron level.
- Supports customer customization.

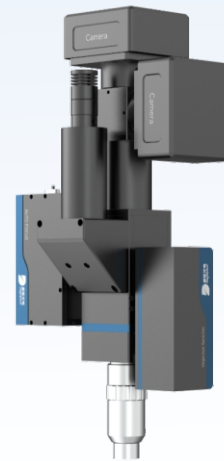
Parameter Specifications

Item	Parameter
Model (Standard)	DS-2D-M3L1-3131
Microscope Module	Model
	DS-MM-221-100
	Magnification
	1X
	Correction Wavelength
	Visible Light
	Focal Length (mm)
Light Source (Optional)	200
	Polarization Function
	Optional
	Weight (g)
	~700
	Illumination Method
	Köhler Illumination
Camera (Optional)	Working Distance (mm)
	≤ 90
Objective (Optional)	Point Light Source
	Power, Color Optional
Focus Solution*	Digital Fiber Light Source
	M-mount/F-mount/C-mount/CS-mount Optional
Operating Temperature	Interface Type
	M-mount/F-mount/C-mount/CS-mount Optional
Storage Temperature	Target Size (mm)
	≤ 30
	Thread Interface
	M26x0.706 (Supports Customization)
	Exit Pupil Position (mm)
	≤ 15
	Example
	Mitutoyo M Plan APO Series
	Focus Method
	Laser Auto Focus
	Drive Method
	Sensor Movement or Sample Movement
	Drive Motor
	Lead Screw Motor or Linear Motor
	Number of Supported Objectives
	≤ 5
	Implementation Solution
	Linear Turret or Rotary Turret
	Drive Motor
	Lead Screw Motor or Linear Motor
	Operating Temperature
	10°C~35°C
	Storage Temperature
	-20°C~60°C

Typical Package Schematic(mm)



Intelligent Focusing Imaging Sensor (Default Configuration 6)



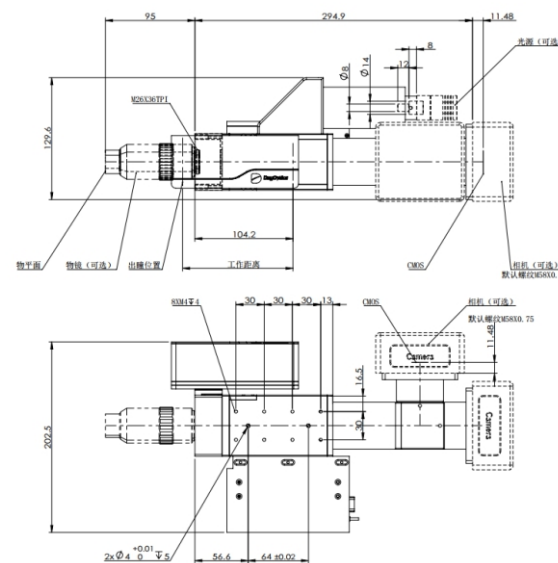
➤ Main Features

- Microscopic imaging supporting $\leq 32\text{mm}$ target surface.
- Uses coaxial Köhler illumination with high uniformity (≥ 0.9).
- Equipped with laser auto-focus sensor for fast focusing.
- Dual-camera optical path for higher inspection speed.
- Supports customer customization.

➤ Parameter Specifications

Item	Parameter	
Model (Standard)	DS-2D-M4L2-3121	
Microscope Module	Model	DS-MM-231-100
	Magnification	1X
	Correction Wavelength	Visible Light
	Focal Length (mm)	200
	Polarization Function	Optional
	Weight (g)	~900
	Illumination Method	Köhler Illumination
Light Source (Optional)	Working Distance (mm)	≤120
	Point Light Source	Power, Color Optional
	Digital Fiber Light Source	
Camera (Optional)	Interface Type	M-mount/F-mount/C-mount/CS-mount Optional
	Target Size (mm)	≤32
Objective (Optional)	Thread Interface	M26x0.706 (Supports Customization)
	Exit Pupil Position (mm)	≤15
Focus Solution	Example	Mitutoyo MPlan APO Series
	Focus Method	Laser Auto Focus
	Drive Method	Objective Movement
	Drive Motor	Lead Screw Motor or Linear Motor
Operating Temperature	10°C~35°C	
Storage Temperature	-20°C~60°C	

➤ **Typical Package Schematic(mm)**



Laser Auto-Focus Sensor

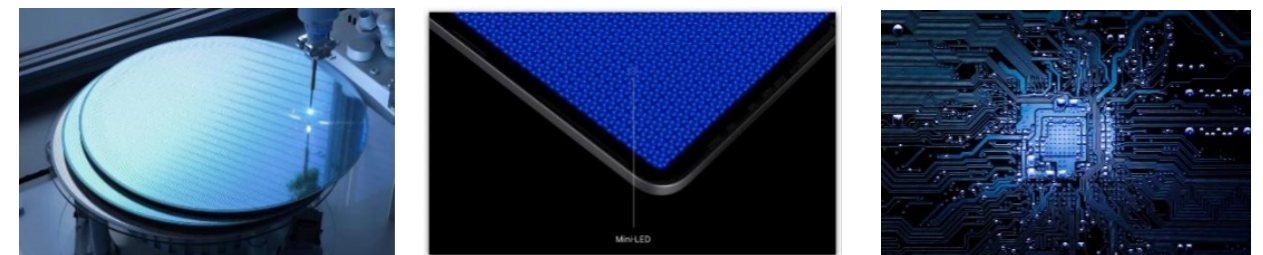


> Main Features

- Uses narrowband filtering technology, strong resistance to ambient light.
- Highly integrated, built-in motor driver capable of directly driving stepper motors up to 2A.
- Micron-level spot diameter, suitable for measuring tiny features or highly reflective surfaces.
- Adaptive laser power, usable for surfaces with different reflectivities.
- Supports high-speed signal processing and closed-loop control, single focus time <100ms.
- Sub-micron focus accuracy, matching different objectives to achieve $1/2 \sim 1/4$ Depth of Field focus.

> Product Applications

- Suitable for microscopic imaging inspection fields like semiconductors, display panels, and industrial automation.
- Applicable for focus scenarios involving non-fully transparent samples.



> Standard Product Numbering

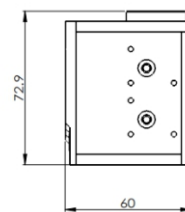
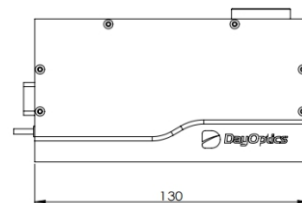
Laser Auto-Focus Sensor					
DS-Prefix	AF-Type	Spot Shape	Excitation Wavelength	External Drive	
		Dot Laser=DT	660nm=1	Sensor Only=1	
		Line Laser=LN	785nm=2	With Controller Box=2	
			Custom=3		

> Parameter Specifications

Item	Parameter				
Objective Magnification	5X	10X	50X	5X	100X
Objective Depth of Field (μm)	14	3.5	0.9	14	0.6
Linear Range* (μm)	4000	400	40	4000	15
Working Distance* (μm)	±12000	±4000	±500	±12000	±150
Focus Accuracy	Static: 1/4 Objective DOF; Dynamic: 1/2 Objective DOF				
Focus Time	Single Focus: 0.1s				
Optional Laser Wavelength (nm)	450	660	780	850	
Typical Output Power (mW)	1.1	1.2	1.1	1.2	
Laser Class	Class 3R				
Power Supply	DC 24V / 3A Max				
Operating Temperature	10°C~35°C				
Storage Temperature	-20°C~60°C				
Weight	Sensor ~750g		Controller ~280g		

*Listed specifications are examples using Mitutoyo APO objectives; parameters will differ for other objectives.

> Typical Package Schematic(mm)



Small Z-Driver - Lead Screw



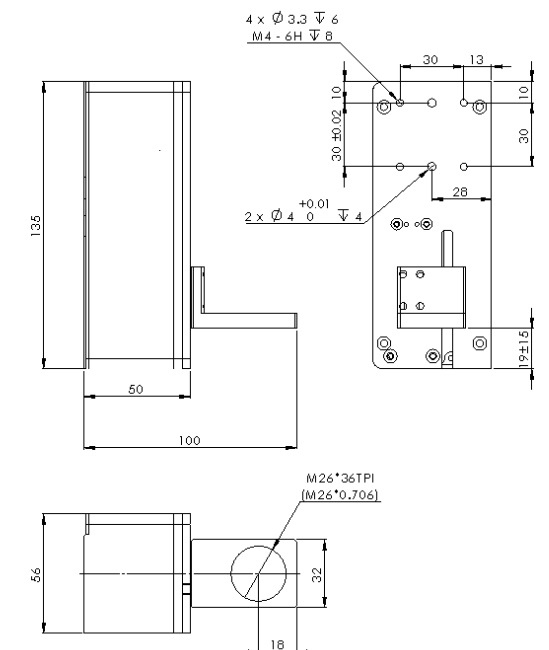
> Main Features

- Large closed-loop travel range.
- Supports simultaneous control via digital and analog signals.
- Sub-nanometer resolution.
- High accuracy and good stability.
- High cost-performance, supports travel customization.

> Parameter Specifications

Item	Parameter	
Drive Motor	Lead Screw Motor	
Type	Standard Accuracy	High Accuracy
Model	DS-ZDRV-S030	DS-ZDRV-S030H
Travel (mm)	±15	
Magnetic Encoder Resolution (μm, Max)	0.02	
Unidirectional Positioning Accuracy (μm, Max)	±5	±3
Repeatability (μm, Max)	±3	±0.3
Max Speed (mm/s)	8	8
Objective Weight (g, Max)	700	700
Backlash (μm, Max)	3	1
Straightness (μm, Max)	10	5
Parallelism (μm, Max)	25	15
Communication Method	Digital (RS485) + Analog (Step Pulse)	
Cable Length (m)	1	
Mounting Method	Any Angle	
Supply Voltage (V)	24	
Drive Current (A, Max)	2	
Operating Temperature	10°C~35°C	
Storage Temperature	-20°C~60°C	

> Typical Package Schematic(mm)



Small Z-Driver - Linear Motor



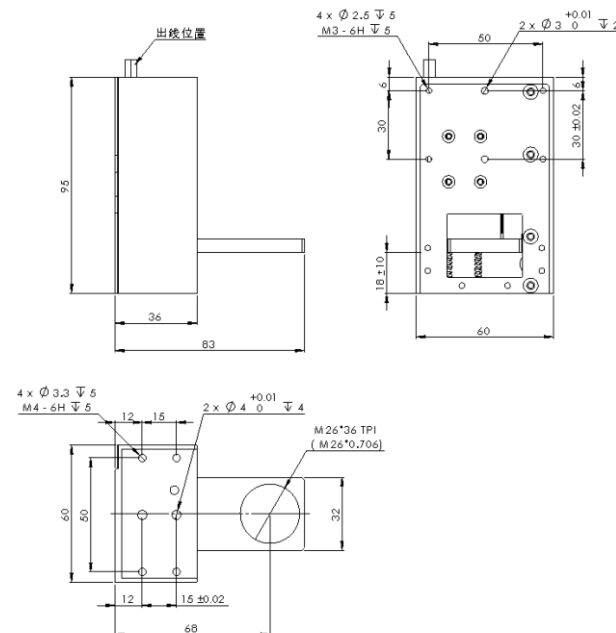
> Main Features

- Optical encoder feedback, accuracy up to nanometer level.
- Supports simultaneous control via digital and analog signals.
- Supports travel adjustment to avoid collision with special field lenses.
- Compact size, facilitates high integration.

> Parameter Specifications

Item	Parameter
Model	DS-ZDRV-L020
Drive Motor	Linear Motor
Travel Range (mm, adjustable)	± 3 to ± 10
Optical Encoder Resolution (μm , Max)	0.02
Unidirectional Positioning Accuracy (μm , Max)	± 0.06
Repeatability (μm , Max)	± 0.04
Max Speed (mm/s)	10
Objective Weight (g, Max)	700
Backlash (μm , Max)	< 0.02
Straightness (μm , Max)	< 1
Parallelism (μm , Max)	< 5
Communication Method	Digital (RS485) + Analog (Step Pulse)
Cable Length (m)	1
Supply Voltage (V)	24
Drive Current (A, Max)	3
Operating Temperature	$10^{\circ}\text{C} \sim 35^{\circ}\text{C}$
Storage Temperature	$-20^{\circ}\text{C} \sim 60^{\circ}\text{C}$

> Typical Package Schematic(mm)



Objective Turret - Linear



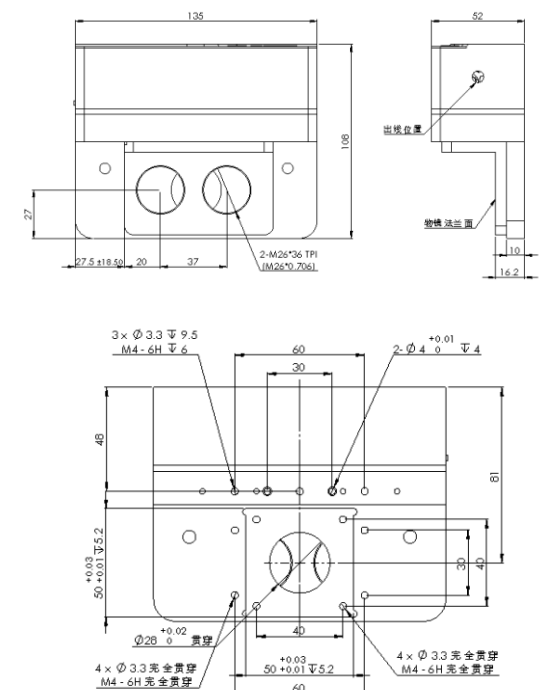
> Main Features

- Good durability.
- High cost-performance.
- Lightweight body.

> Parameter Specifications

Item	Parameter
Drive Motor	Lead Screw Motor
Number of Objective Positions (pcs, Min)	2
Objective Diameter (mm, Max)	37.5
Objective Thread (mm, Typ)	M26 $\times$ 0.706
Objective Switching Time (s)	< 5
Repeatability (μm , Max)	± 10
Communication Method	RS485
Supply Voltage (V)	24
Drive Current (A, Max)	2
Body Weight (Kg)	0.6
Operating Temperature	$10^{\circ}\text{C} \sim 35^{\circ}\text{C}$
Storage Temperature	$-20^{\circ}\text{C} \sim 60^{\circ}\text{C}$

> Typical Package Schematic(mm)



Objective Turret - Rotary

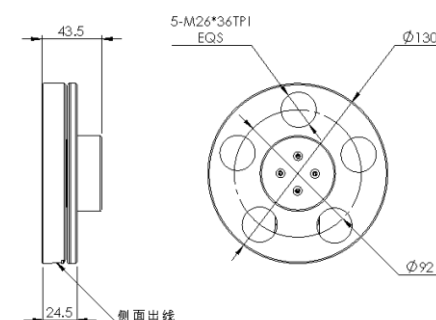
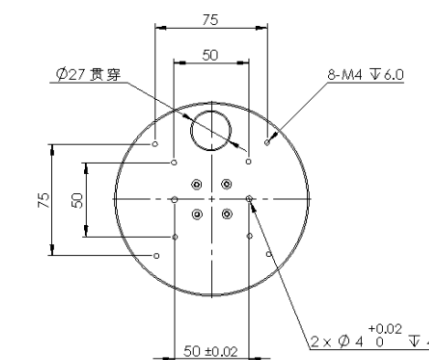
> Main Features

- Good durability.
- High cost-performance.
- Lightweight body.
- No external drive.

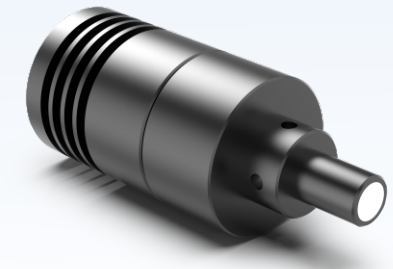
> Parameter Specifications

Item	Parameter
Model	DS-OBJ-SW-R05-N
Drive Method	Brushless Servo Motor
Speed (RPM, Max)	36
Number of Objective Positions (pcs)	5
Objective Diameter (mm, Max)	37.5
Objective Thread (mm, Typ)	M26 × 0.706
Repeatability (μm, Max)	±3
Communication Method	RS485
Supply Voltage (V)	24
Drive Current (A, Max)	2
Body Weight (Kg)	0.9
Operating Temperature	10°C~35°C
Storage Temperature	-20°C~60°C

> Typical Package Schematic(mm)



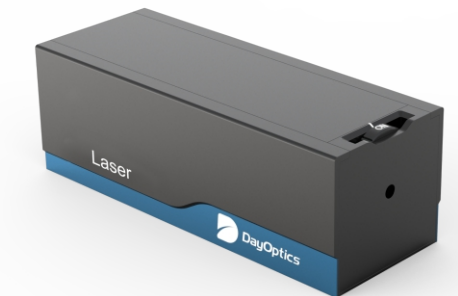
Point Light Source



Digital Fiber Light Source



Laser Light Source



Objective Lens

