

TZM0325 Series 0.3-2.5X Monocular Zoom Objective (MZO)



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1 The Basic Characteristic of TZM0325 Series MZO

1.1 Introduction of TZM0325 Series MZO

TZM0325 series MZO (Monocular Zoom Objective) is an ideal choice for machine vision, industrial inspection, scientific research and education. The design is based on the bilateral parallel light path principle and the modular design concept, with superior optical performance and strong compatibility.



Figure 1 TZM0325 with different module

1.2 The Basic Characteristics of TZM0325 Series MZO

The basic module of TZM0325 series monocular zoom object is TZM0325-W5100-TV5100-A50. Its main features are shown below:

- With 0.3X~2.5X zoom range, 8X zoom ratio
- Larger NA: 0.011-0.062 (When using 1.00x Auxiliary Lens)
- Higher resolution: 25um-4.43um (When using 1.00x Auxiliary Lens)
- Larger sensor size: 2/3" (When using 1.00x TV Lens)
- Working distance range: 100mm (When using 1.00x Auxiliary Lens)
- With adjustable BFL, parfocal in zoom range
- With adjustable center, the image center remains unchanged from 2.5x to 0.3x
- Compact size: 183 mm (Length) × 40 mm (Diameter)
- Auxiliary Lens with 1.00x magnification (Customizable)
- TV Lens with 1.00x magnification (Customizable)
- Brightness adjustable LED Direct Ring Light (Optional)
- LED Transmissive Light (Optional)
- 45mm or 50mm Bracket Adapter (Optional)

1.3 The Optical Specifications of TZM0325

The optical specifications of TZM0325 are shown in Table 1.

Table 1 TZM0325-W5100-TV5100

Model	WD/mm	PMAG	NA	Camera Size	FOV/mm	Resolution/ μ m
TZM0325(D)-W5100-TV5100	100	0.3x-2.5x	0.011-0.062	1/3" 1/2" 2/3"	2.4-20.0 3.2-26.7 4.4-36.7	25.0-4.4
TZM0325(D)-W5050-TV5100 (TBD)	200	0.15x-1.25x	0.006-0.031	1/3" 1/2" 2/3"	4.8-40.0 6.4-53.4 8.8-73.4	45.8-8.9
TZM0325(D)-W5075-TV5100 (TBD)	133	0.225x-1.875x	0.008-0.047	1/3" 1/2" 2/3"	3.2-26.7 4.3-35.6 5.9-48.9	34.0-5.9
TZM0325(D)-W5150-TV5100 (TBD)	67	0.45x-3.75x	0.017-0.093	1/3" 1/2" 2/3"	1.6-13.3 2.1-17.8 2.9-24.5	16.1-3.0
TZM0325(D)-W5200-TV5100 (TBD)	50	0.6x-5.0x	0.022-0.124	1/3" 1/2" 2/3"	1.2-10.0 1.6-13.4 2.2-18.4	12.5-2.2

WD: Working Distance; **PMAG:** Primary Magnification; **FOV:** Field of View in the object side; **NA:** Numerical Aperture; **D:** represents Detent

1.4 Auxiliary Lens Module

The replaceable **Auxiliary Lens** (code **W5bbb**), which can be threaded to the bottom of the **Middle Zoom Module**, here **5** is the series number, **bbb** represents the magnification of **Auxiliary Lens**. Different magnification of **Auxiliary Lens** defines the entire magnification of **TZM0325** series MZO, resulting different working distance as well. For example, **W5100 Auxiliary Lens** with 1.00x magnification reaches 100mm working distance, while **W5050 Auxiliary Lens** will have a reduced magnification to half and the working distance will be extended to about 200mm. **Auxiliary Lens** and its corresponding optical parameters for **TZM0325** are shown in Table 2.

Table 2 The order number and optical parameters of Auxiliary Lens

Order number	Magnification	Working distance (mmm)
W5050(TBD)	0.50X	200
W5075(TBD)	0.75X	133
W5100	1.00X	100
W5150(TBD)	1.50X	67
W5200(TBD)	2.00X	50

Note: The same **Auxiliary Lens** with different **TV lens** is just used to adapt to different size image sensor, which will not have much impact on the field of view of the MZO.

1.5 TV Lens

The **TV Lens** (code **TV5ccc**), which can be threaded to the top of the **Middle Zoom Module**, here **5** is the series number, **ccc** is the magnification of the **TV Lens**. **TV Lens** with different magnification is used to adapt to sensors with different size. For example, the same field of view could be obtained when **TV5100** is used with a 2/3" size sensor. **TV Lens** and its corresponding

optical parameters are shown in Table 3.

Table 3 The order number and optical parameters of TV Lens

Order number	Magnification	The maximum compatible sensor size
TV5100	1.00X	2/3"

Note: Smaller image sensors can also be used for TV Lens with higher magnification, but in this way, the FOV of MZO will be reduced.

1.6 Bracket Adapter

Bracket Adapter (code Add) used for brackets with different mounting apertures and is sheathed in the middle of MZO. dd is the diameter of the bracket. Current available Adds include A50 and A45. The installation method of the Bracket Adapter and bracket is shown in Figure 2.

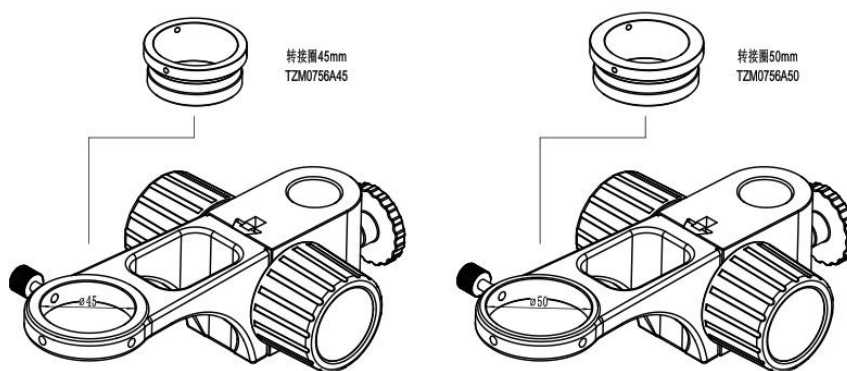


Figure 2 TzM0325 series MZO bracket adapter

1.7 The Dimension of TzM0325 Series MZO

The dimension of TzM0325-W5100-TV5100 is shown in Figure 3.

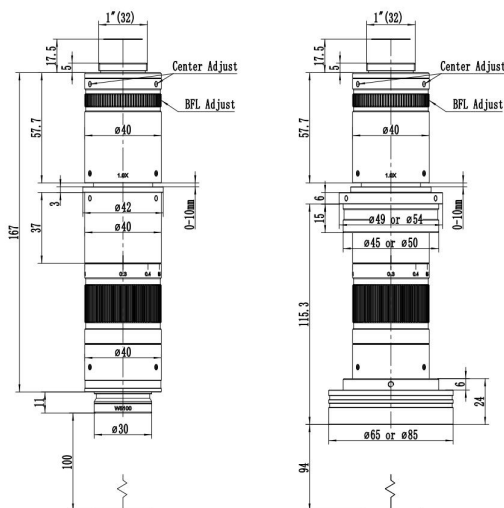


Figure 3 Dimension of TzM0325-W5100-TV5100 (Left)
Dimension of TzM0325-W5100-TV5100-A50+TzM0756DRL light (Right)

2 The Connection of TZM0325 Series MZO and Camera



Figure 4 TZM0325-W45100- TV45100+TZM0756DRL-85+HDMI Camera+TPS-210A+SCRN

3 Pictures Taken with TZM0325 Series MZO

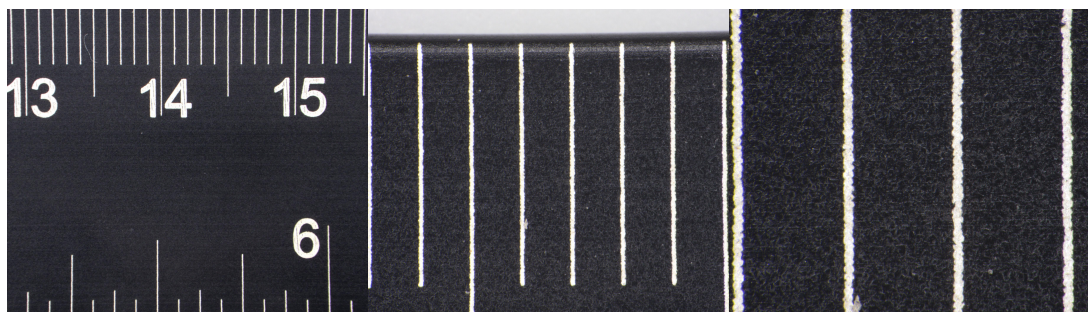


Figure 5 Pictures of ruler taken with TZM0325-W5100-TV5100 under LED Direct Ring Light illumination
left) 0.3X, middle) 1.2X, right) 2.5X

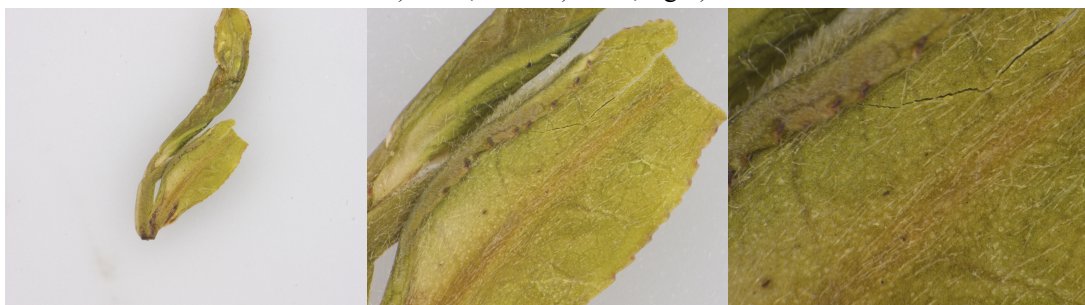


Figure 6 Pictures of Tea taken with TZM0325-W5100-TV5100
left) 0.3X, middle) 1.2X, right) 2.5X

4 TZM0325 Series MZO Packing List

The packing information of the [TZM0325](#) series MZO is as follows:



Figure 7 The TZM0325 Main Body, including Auxiliary Lens Module, Middle Zoom Module, TV Lens, Camera Adapter Tube and Bracket Adapter

The packing information of [TZM0756DRL](#) is as follows:



Figure 8 TZM0756DRL, including LED Direct Ring Light and Power Adapter

The packing information of [TZM0756DRPL](#) is as follows:



Figure 9 TZM0756DRPL, including LED Direct Ring Polarization Light and Power Adapter

The packing information of [TZM0756DRL-85](#) is as follows:



Figure 10 TZM0756DRL-85, including LED Direct Ring Light and Power Adapter

5 Order List of TZM0325 Series MZO

Table 4 Function Module Optional Order List

Module	Order number	Quantity	Remarks	Description
Middle Zoom Module	TZM0325			Ordinary Middle Zoom Module
	TZM0325D			Middle Zoom Module with detent
Auxiliary Lens Module	W5100			1.0X Object Lens
	W5050			0.5X Object Lens
	W5075			0.75X Object Lens
	W5150			1.5X Object Lens
	W5200			2.0X Object Lens
TV Lens	TV45100			For 2/3" Sensor
Bracket Adapter	A45			45mm Bracket Adapter
	A50			50mm Bracket Adapter
LED Direct Ring Light Module	TZM0756DRL			LED Direct Ring Light (65mm outer diameter)
	TZM0756DRL-85			LED Direct Ring Light (85mm outer diameter)
	TZM0756DRPL			LED Direct Ring Polarization Light
Transmissive Light Module	TZM0756TL			LED Transmissive Light
Power of Light Source	40600014			POWER-U-12V1A(American Standard)
	40600015			POWER-E-12V1A(European standard)

6 Service

For customers who purchase MZO from local dealer, please contact your dealer for more information.

For technical support, please contact e-mail address: tphz@toupstek.com.