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TZM0745A 0.7-4.5X MZO



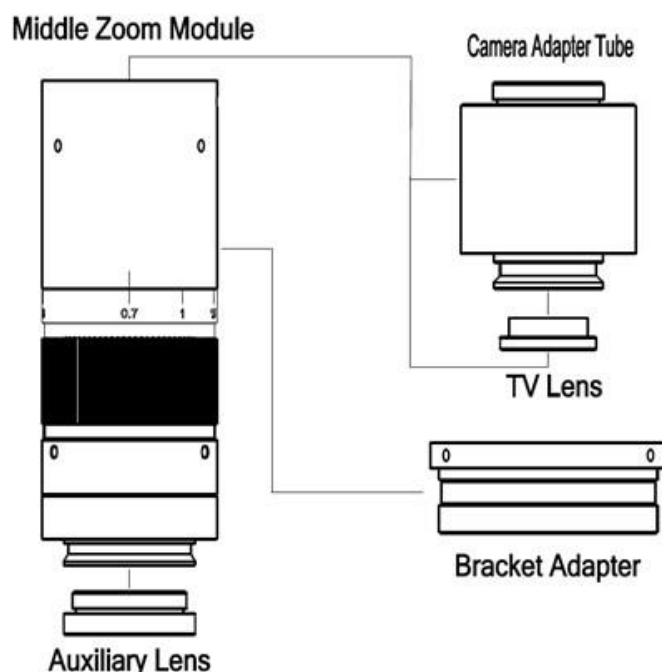
- ☐ Provide basic zoom objective W100-TZM0745A-TV100 with 0.7X~4.5X zoom range
- ☐ Large optical zoom ratio: 6.5X
- ☐ Larger NA: 0.018-0.092 (When using 1x Auxiliary Lens)
- ☐ Higher resolution: 18.6um-3.65um (When using 1x Auxiliary Lens)
- ☐ Larger field of view: 2.44mm-31.43mm(Object plane)
- ☐ Larger sensor size: 2/3 Inch (When using 1x TV Lens)
- ☐ Working distance: 37.5mm-160mm
- ☐ Parfocal in zoom range
- ☐ Compatible with infinity objectives (both biological and metallographic)

TZM0745A Monocular Zoom Objective(MZO)

TZM0745A is designed with modularized structure which is based on the bilateral parallel light path.with excellent optical performance.

The Five Basic Modules of TZM0745A Series MZO

The five basic modules are: Middle Zoom Module, Auxiliary Lens Module, TV Lens Module, Bracket Adapter Module and Optional Module as shown below(The Optional Module is not shown):>



TSM0745A Main Body, including Auxiliary Lens Module, Middle Zoom Module, TV Lens, Camera Adapter Tube and Bracket Adapter>

The Nomenclature of TSM0745A Series MZO

Because of TSM0745A series MZO's modular design, each module of TSM0745A series MZO is named respectively. The specific naming rules and corresponding parameters of each module are as follows:

Module one: the Middle Zoom Module (code TSM0745Aaa)

The Middle Zoom Module (code TSM0745Aaa), which is the main body of TSM0745A series MZO. There are four types of Middle Zoom Modules including TSM0745A, TSM0745AT, TSM0745AD and TSM0745ATD. Details are listed in Table below

Order Number	Meaning	TSM0745A	Postfix meaning
TSM0745A	Ordinary Middle Zoom Module	0.7X~4.5X	NA
TSM0745AT	Middle Zoom Module with back focus trimmable(adjustable) function	0.7X~4.5X	T : Trim
TSM0745AD	Middle Zoom Module with detent to fix the magnification function	0.7X~4.5X	D : Detent
TSM0745ATD	Middle Zoom Module with back focus trimmable and magnification detent functions	0.7X~4.5X	TD : Trim & Detent

Module two: the replaceable Auxiliary Lens Module(code Wbbb)

The replaceable Auxiliary Lens, which can be threaded to the bottom of the Middle Zoom Module(code Wbbb), bbb is the magnification of Auxiliary Lens. Different magnification of the Auxiliary Lens defines the whole magnification of TSM0745A series MZO, resulting different working distance. For example, compared with the W100 Auxiliary Lens with 1.00x magnification and 80mm working distance, the W050 Auxiliary Lens will have a reduced magnification to half and the working distance will be extended to about 160mm. Auxiliary Lens and its corresponding optical parameters are shown in Table below:

Order number	Magnification	Working distance (mmm)	Field of View in the object side (TV050, 1/3" sensor)	
			Lower magnification	Higher magnification
W050	0.5X	160	34.28mm	4.28mm
W075	0.75X	105	20.81mm	2.86mm
W100	1.00X	80	17.14mm	2.14mm
W150	1.50X	51.5	11.43mm	1.43mm
W200	2.00X	37.5	8.57mm	1.07mm

Module three: the TV Lens Module(code TVccc),

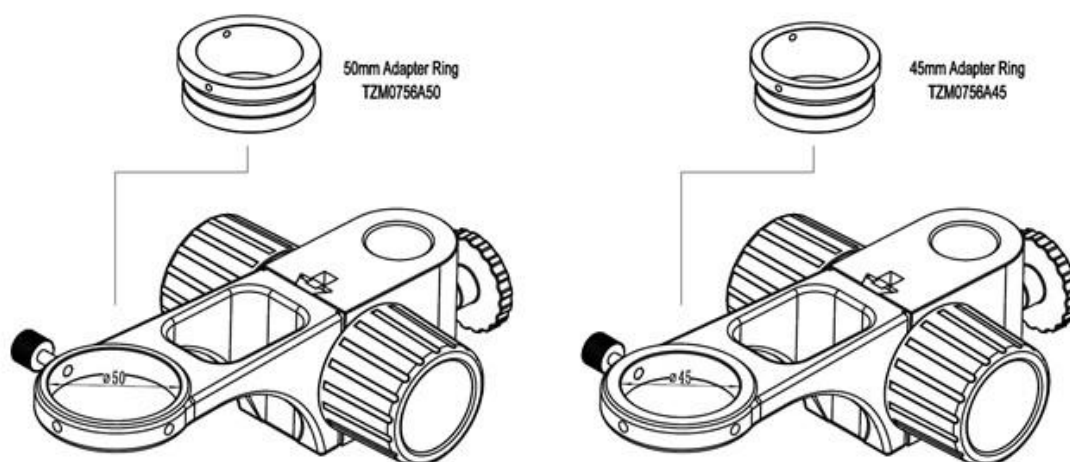
which can be threaded to the top of the Middle Zoom Module, ccc is the magnification of TV Lens. TV Lens with different magnification is used to adapt to sensors with different size. For example, the same field of view could be obtained when TV100 is used with a 2/3" size sensor and

TV050 is used with a 1/3" size sensor . TV Lens and its corresponding optical parameters are shown in Table 1-3.

Order number	The maximum compatible sensor size
TV050	1/3"
TV075	1/1.8"
TV100	2/3"
TV150	1"
TV200	4/3"

Module four: Bracket Adapter Module (code Add)

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



TSM0745A Main Body, including Auxiliary Lens Module, Middle Zoom Module, TV Lens, Camera Adapter Tube and Bracket Adapter

Module Five: Light Source Module for TSM0745A Series MZO

Module	Order Number	Description
Coaxial Light Module	TSM0745ACL+TSM0745ASL	Coaxial Light Adapter + LED Spot Light
LED Direct Ring Light Module	TSM0745ADRL TSM0745ADRPL	LED Direct Ring Light LED Direct Ring Polarization Light
Transmissive Light Module	TSM0745ATL	LED Transmissive Light
Power of light source	40600014 40600015	US:POWER-U-12V1A(Power Adapter American Standard) DE: POWER-E-12V1A(Power Adapter European standard)

The Naming of the TSM0745A Series MZO

We have a special naming format for TSM0745A series MZO, we name TSM0745A series products with a series module code, which is a combination of code of different modules and connected with crossbar “-” to form a comprehensive naming. With this paradigm, user can understand the meaning and function briefly. For example, if a MZO is composed of Middle Zoom Module TSM0745ATD, Auxiliary Lens W100(1.00x), TV Lens TV050(0.5x) and 50mm Bracket Adapter A50, the final MZO can be expressed as:

TSM0745TD-W100-TV050-A50

Currently available TSM0745Aaa: TSM0745A, TSM0745AT, TSM0745AD, TSM0745ATD;

Currently available Wbbb: W100, W050, W075, W150 and W200;

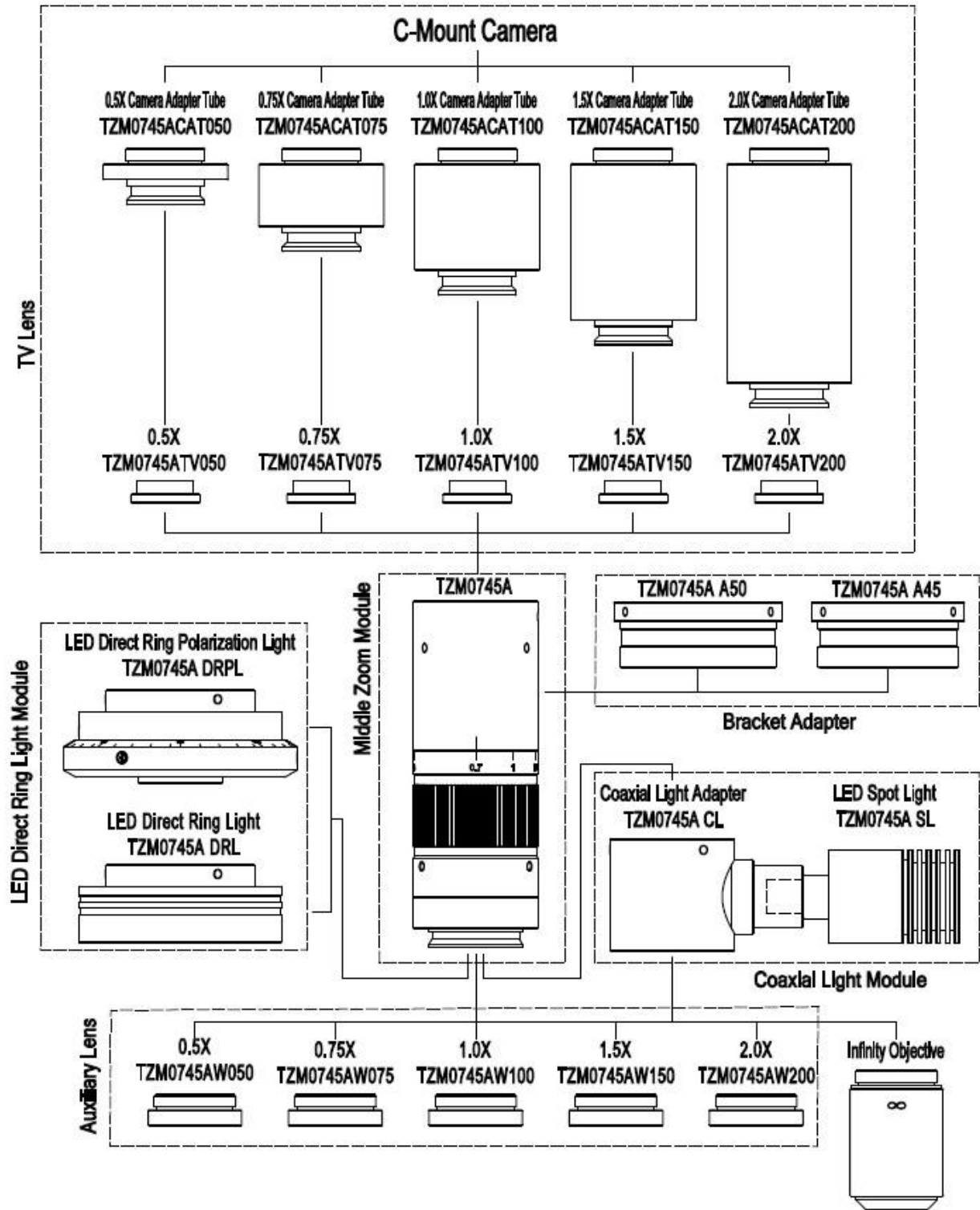
Currently available TVccc: TV100, TV050, TV075, TV150 and TV200;

Currently available Add: A50 and A45;

Currently available Optional Modules are LED Direct Ring Light Module (including LED Direct Ring Light Module and LED Direct Ring Polarization Light Module) and Coaxial Light Module (composed of Coaxial Light Adapter and LED Spot Light).

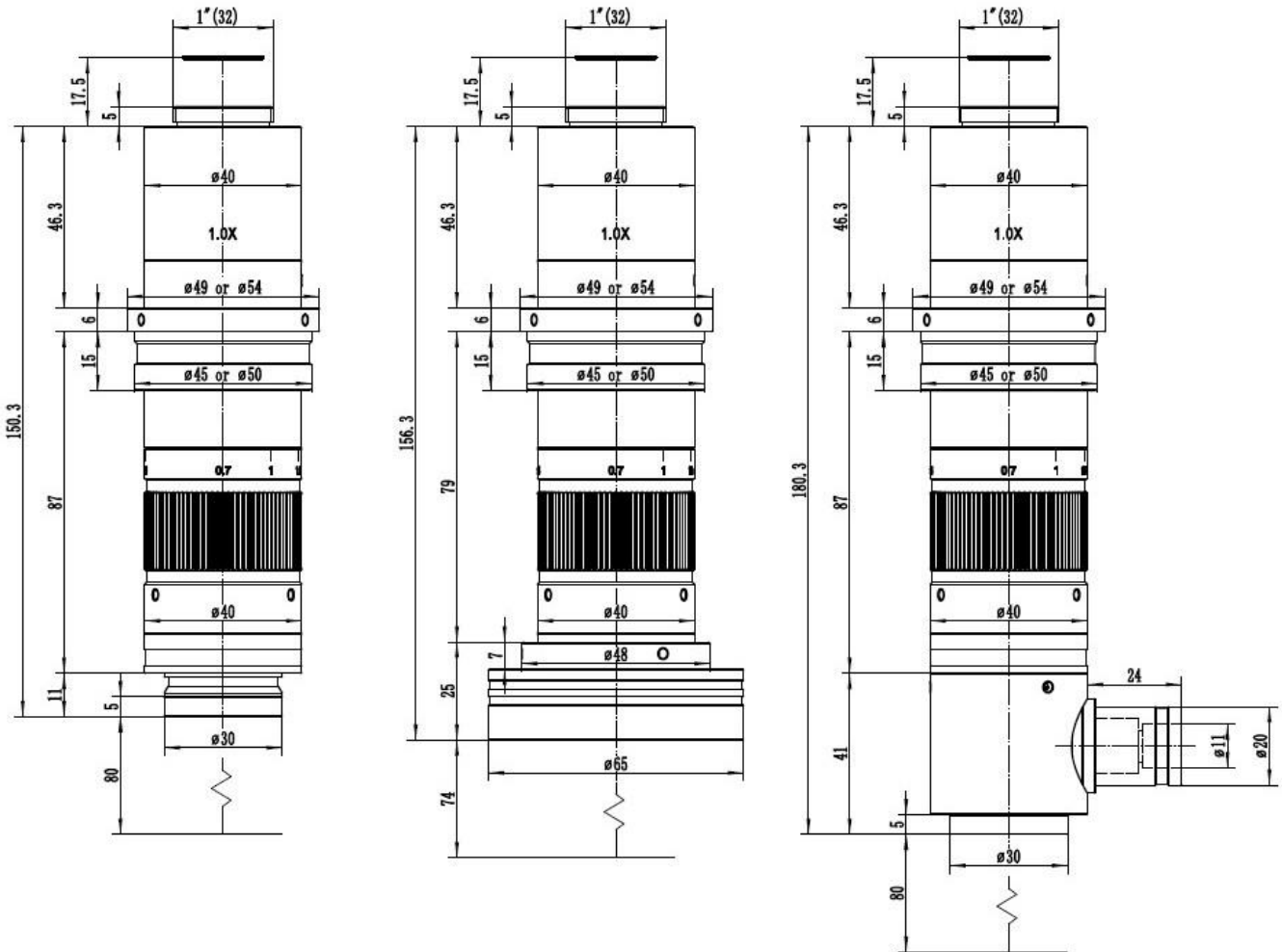
The other Auxiliary Lens with b.bb magnification, TV Lens withc.cc magnification and Bracket Adapter with dd mm size can be customized according to the requirements.

The Configuration of TZM0745A Series MZO



Basic module and optional module of monocular zoom microscope objective

The Dimension of TzM0745A Series MZO



Dimensions of TZM0745A-W100-TV100-A50 with different light module

a) TZM0745A-W100-TV100-A50 without light module;

b) TZM0745A-W100-TV100-A50 equipped with Direct Ring Light Module,

c) TZM0745A-W100-TV100-A50 equipped with Coaxial Light Module)

Model List of TZM0745A Series MZO with Different Auxiliary and TV Lens

The combinations of different the Auxiliary Lens, The Middle Zoom Module and the TV Lens. With this figure, user can configure Monocular Zoom Objective with different magnification to fit different sensor and different application.

In the table, the code TZM0745Aaa's aa is not specified which can be TZM0745A, TZM0745AT, TZM0745AD and TZM0745ATD

In the table, the code code Add does not specified which can be A50 or A45

Camera	Auxiliary Lens-Main Zoom Module-TV Lens	WD(mm)	PMAG	DFOV(mm)	NAO
1/3"	TZM0745A-W050-TV050	160	0.18X-1.13X	34.28-5.33	0.009-0.039
	TZM0745A-W075-TV050	105	0.26X-1.69X	22.86-3.56	0.013-0.059
	TZM0745A-W100-TV050	80	0.35X-2.25X	17.14-2.67	0.018-0.078
	TZM0745A-W150-TV050	52	0.53X-3.38X	11.43-1.78	0.026-0.117
	TZM0745A-W200-TV050	38	0.70X-4.50X	8.57-1.33	0.035-0.155
1/2"	TZM0745A-W050-TV075	160	0.26X-1.69X	30.48-4.74	0.009-0.039
	TZM0745A-W075-TV075	105	0.40X-3.15X	20.32-3.16	0.013-0.059
	TZM0745A-W100-TV075	80	0.53X-3.38X	15.24-2.37	0.018-0.078
	TZM0745A-W150-TV075	52	0.79X-6.30X	10.16-1.58	0.026-0.117
	TZM0745A-W200-TV075	38	1.05X-8.40X	7.62-1.19	0.035-0.155
2/3"	TZM0745A-W050-TV100	160	0.35X-2.80X	31.43-4.89	0.009-0.039
	TZM0745A-W075-TV100	105	0.53X-4.20X	20.95-3.26	0.013-0.059
	TZM0745A-W100-TV100	80	0.70X-4.50X	15.71-2.44	0.018-0.078
	TZM0745A-W150-TV100	52	1.05X-8.40X	10.46-1.63	0.026-0.117
	TZM0745A-W200-TV100	38	1.40X-11.2X	7.90-1.22	0.035-0.155
1"	TZM0745A-W050-TV150	160	0.53X-4.20X	30.48-4.74	0.009-0.039
	TZM0745A-W075-TV150	105	0.79X-6.30X	20.25-3.16	0.013-0.059
	TZM0745A-W100-TV150	80	1.05X-6.75X	15.24-2.37	0.018-0.078
	TZM0745A-W150-TV150	51.5	1.58X-10.13X	10.13-1.58	0.026-0.117

4/3“	TZM0745A-W200-TV150	37.5	2.10X-13.5X	7.62-1.19	0.035-0.155
	TZM0745A-W050-TV200	160	0.70X-4.50X	32.14-5.00	0.009-0.039
	TZM0745A-W075-TV200	105	1.05X-6.75X	21.43-3.33	0.013-0.059
	TZM0745A-W100-TV200	80	1.40X-9.00X	16.07-2.50	0.018-0.078
	TZM0745A-W150-TV200	51.5	2.10X-13.5X	10.71-1.67	0.026-0.117
	TZM0745A-W200-TV200	37.5	2.80X-18.0X	8.04-1.1.25	0.035-0.155

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