

**HIGH MAGNIFICATION ZOOM MICROSCOPE**



**DZ2/DZ101**  
**HIGH RESOLUTION/IMAGE-QUALITY ZOOM MICROSCOPE**

# HIGH MAGNIFICATION ZOOM MICROSCOPE DZ2

## Realizing High-Quality High-Definition Image through Optical Technologies High Resolution!

High magnification zoom microscope DZ2 series, with Zoom ratio 10, are much improved by the new designed high-resolution objective ZC70.

Making full use of different types of Objective, Camera, Illumination modes and Image Processing Software, different systems could be set up to meet various needs.

By choosing various items freely, the most suitable magnified image could be made out. DZ2 series are the high-performance zoom microscope for the new century fulfilling various needs in most business fields.



## High-performance Lenses to Accomplish Ultra-high Resolution

Optical design technology, Lens finishing and polishing technology, Assembly and adjustment technology.

The lenses produced by Union Optical can assure stable high quality performance by adopting these three technologies. These valuable technology know-hows, which are developed during long time, bring out the high-quality and high-resolution images. ZC series objectives are much suitable for research, production, testing and inspecting, to pursue the best image processing for various observation needs.



ZC5 (25~250X)



ZC15 (75~750X)



ZC50A (250~2500X)



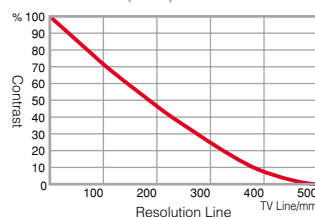
ZC70 (350~3500X)

### Specifications

Type	ZC5
Magnification	25~250X (0.5~5X)
W.D. (mm)	45
Focal Depth ( $\pm\mu\text{m}$ )	63.1~2750
N.A.	0.01~0.066
Resolution ( $\mu\text{m}$ )	5.1~33.7

※The magnification can be achieved when using 1/2" CCD Camera and 15" TV Monitor.

### MTF Curve (250X)

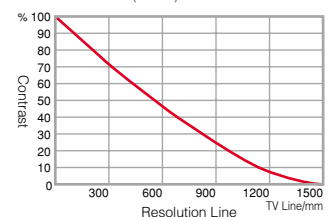


### Specifications

Type	ZC15
Magnification	75~750X (1.5~15X)
W.D. (mm)	46.2
Focal Depth ( $\pm\mu\text{m}$ )	6.9~305.6
N.A.	0.03~0.20
Resolution ( $\mu\text{m}$ )	1.7~11.2

※The magnification can be achieved when using 1/2" CCD Camera and 15" TV Monitor.

### MTF Curve (750X)

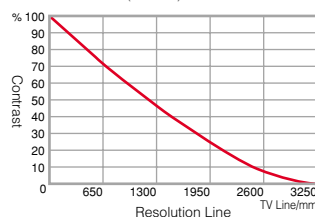


### Specifications

Type	ZC50A
Magnification	250~2500X (5~50X)
W.D. (mm)	14
Focal Depth ( $\pm\mu\text{m}$ )	1.3~27.5
N.A.	0.1~0.45
Resolution ( $\mu\text{m}$ )	0.7~3.3

※The magnification can be achieved when using 1/2" CCD Camera and 15" TV Monitor.

### MTF Curve (2500X)

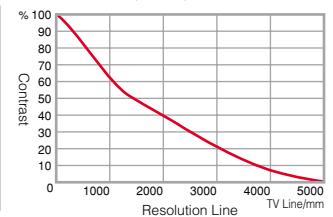


### Specifications

Type	ZC70
Magnification	350~3500X (7~70X)
W.D. (mm)	7.1
Focal Depth ( $\pm\mu\text{m}$ )	0.56~14
N.A.	0.14~0.7
Resolution ( $\mu\text{m}$ )	0.47~2.4

※The magnification can be achieved when using 1/2" CCD Camera and 15" TV Monitor.

### MTF Curve (3500X)



### <MTF>

MTF is the short for Modulation Transfer Function. It is one of the methods to value the optical performance.

MTF curve can be made when setting its X-axis as the TV resolution line per 1mm, and the Y-axis as the contrast (%).

From the above graphs, it can be seen that when the contrast is 15%, the TV resolution of ZC5 is about 350 line/mm, ZC15, about 1050 line/mm, ZC50A, about 2300 line/mm and ZC70, about 3500 line/mm, which shows clearly the high resolution of each objectives.

# Zoom Microscope DZ2

## ■ Covering wide range of magnification by simply changing the objective

Since the optical tube can be commonly used, only changing the objective can cover wide range of magnifications.

The suitable objectives can be chosen freely and economically in accordance with different needs.



## ■ Motorized type for equipment assembling

Motorized zoom type microscope has the motorized zoom type optical tube (DZ2-E-BM) and precise focus fine motorized adjustable bracket (U11-000221), and also can be assembled to FA equipment.

### <E.g.:>

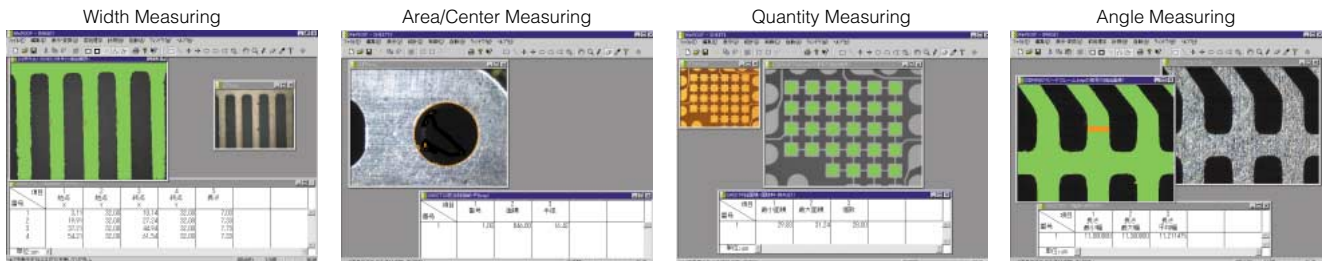
- for inspecting semi-conductor device
- for inspecting LCD board



## Image Analyzing Software

Image filing, image measuring, image processing, reporting and statistic, etc. can be simply carried out on the TV monitor by moving the mouse only.(Image analyzing software is an optional item.)

## ■ Measuring

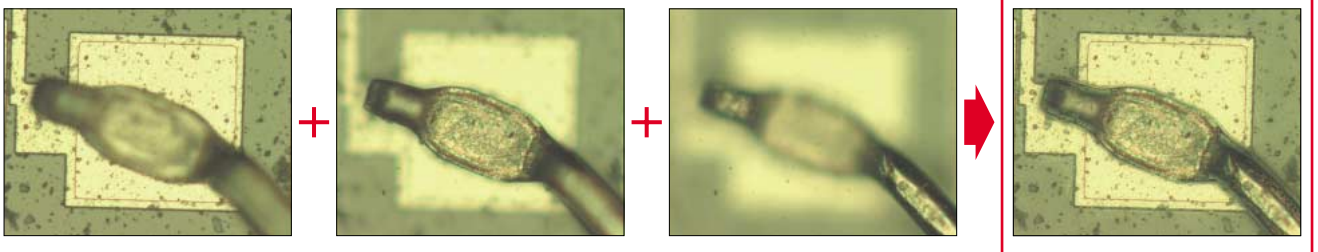


※Other measurements of, such as shape, density, color, length and R, etc., can be carried out.

## ■ Combination of images with different focal range

This function benefits a lot for observation with deep focal depth in high magnification.

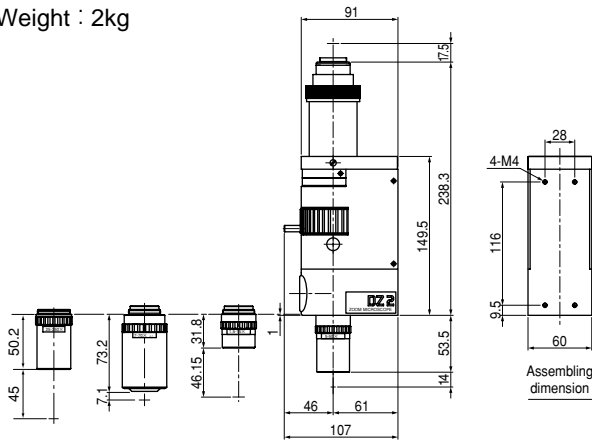
Bump



## DZ2 Dimensions

### Optical Tube Type (DZ2-T)

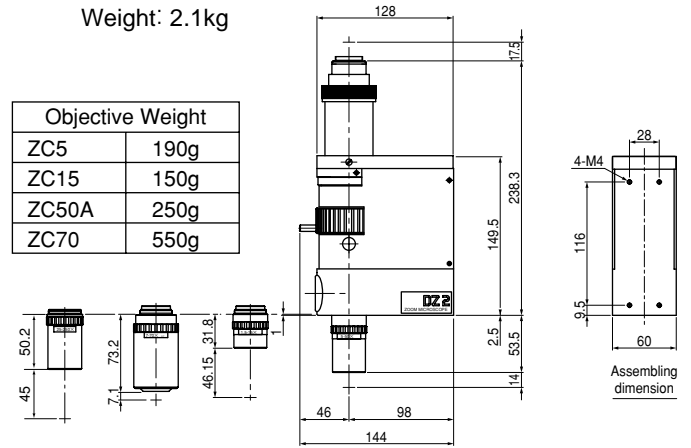
Weight : 2kg



### Large Optical Tube Type (DZ2-F)

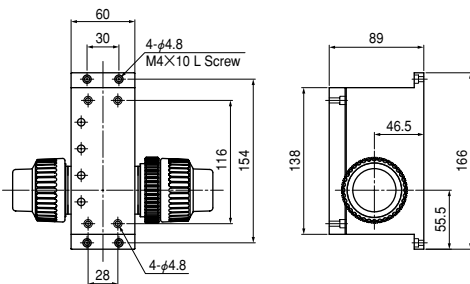
Weight: 2.1kg

Objective Weight	
ZC5	190g
ZC15	150g
ZC50A	250g
ZC70	550g



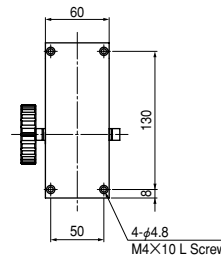
### Coarse and Fine Adjustable Bracket (U11-000435)

Travel : 25mm  
 Coarse adjusted : 5.5mm/rev  
 Fine adjusted : 0.1mm/rev  
 Weight : 1.9kg



### Fine Adjustable Bracket (DIA5-BR100)

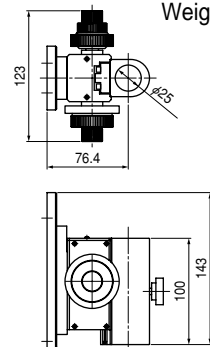
Travel : 60mm (1.2mm/rev)  
 Weight: : 1.1kg



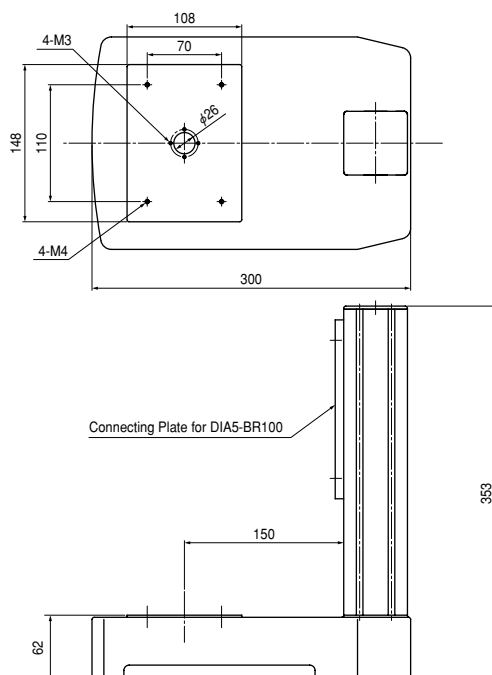
### Simple Bracket (DIA5-SBR)

Travel : Coarse Adjuster 35mm  
 Fine adjuster 2mm  
 (0.2mm/rev)

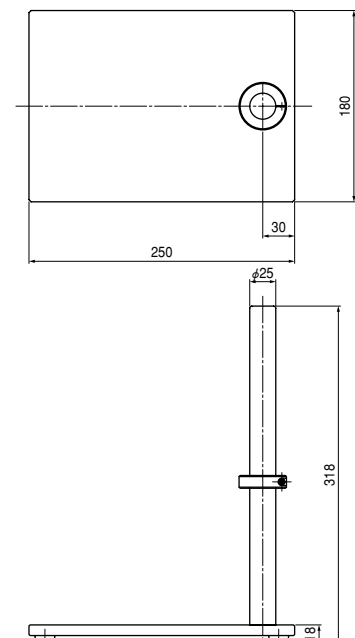
Weight : 1.2kg



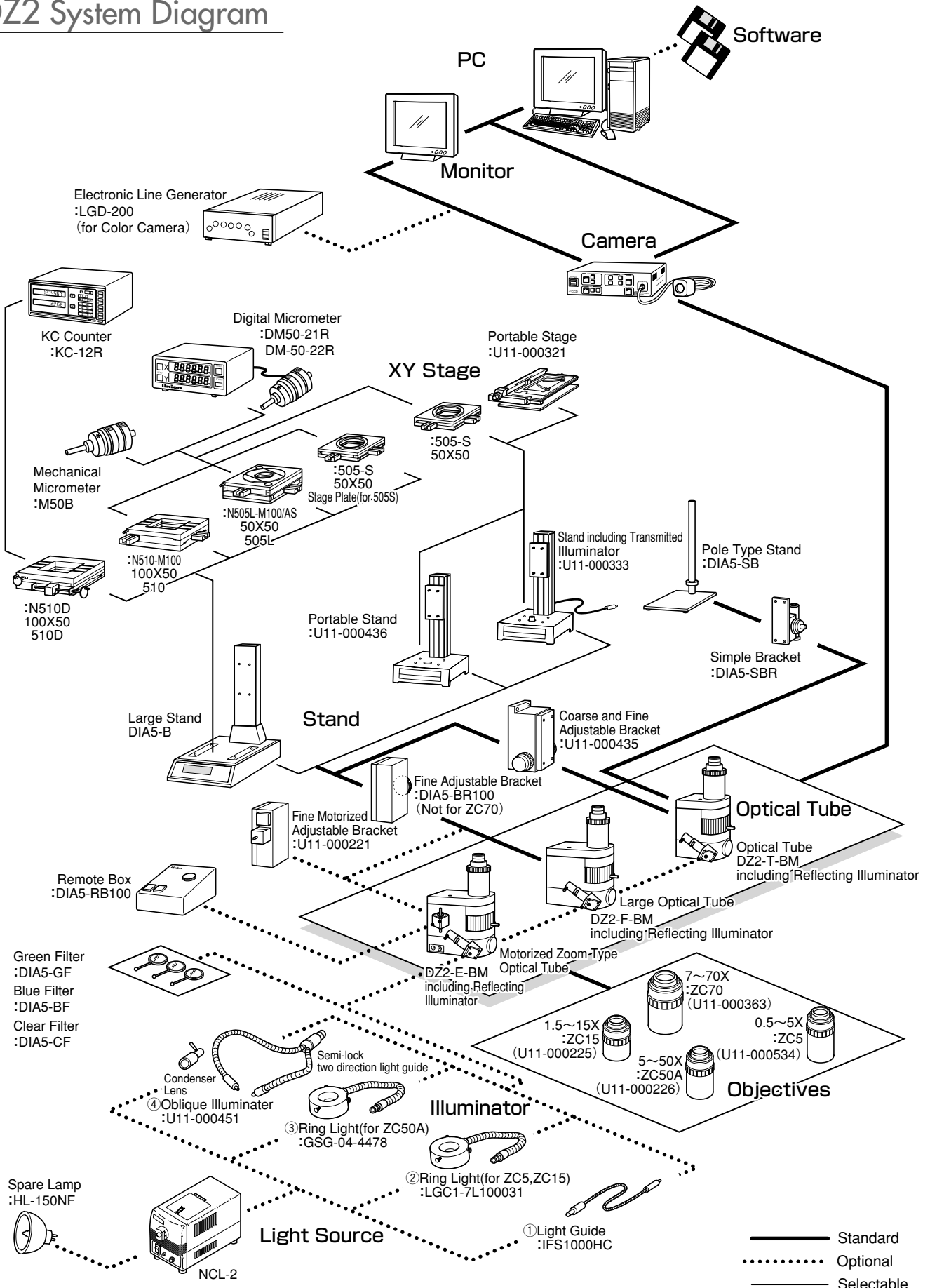
### Portable Stand (U11-000436)



### Pole Type Stand (DIA5-SB)



## DZ2 System Diagram



# WIDE FIELD ZOOM MICROSCOPE DZ101

## Zoom Optical Design for Wide Field of View and Long Working Distance

Zoom ratio 6 in a same working distance, zoom ratio 15 in different working distance, Magnification changeable from 0.12X to 1.8X by focus without any supplementary lens Light weight and compact. (Main body : 152mm of length and 330g of weight)

Long working distance available from 136 to 271mm according to the magnification suitable for not only magnifying, but also image analyzing such as measuring, comparing observation and image improving.

### DZ101 specifications

Name	Description
Zoom Optical Magnification	Magnification changeable from 0.12X to 1.8X.
Zoom Unit	Zoom ratio: 6, manually adjusting, zoom change with stopper
Viewing Unit	For Monitor only, with C-mount CCD Camera: 1/2" type or 1/3" type (as option)
Illuminator(as option)	Coaxial reflecting illuminator (for high magnification) Ring light illuminator, Oblique illuminator
Stand (as option)	Base, Pole, Bracket(Coarse and fine adjustable)

#### 0.12~0.72X

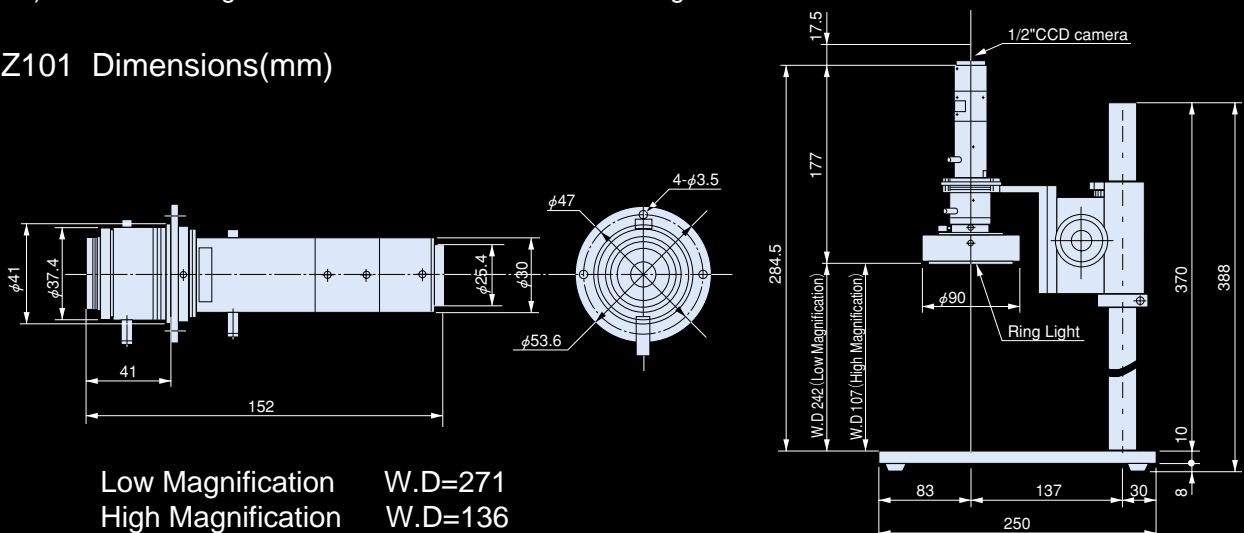
Magnification	N.A.	W.D.(mm)	Real Field of View DxW (diagonal length) on 1/2" CCD	Focal Depth	Magnification on the Monitor
0.12	0.003	271	40.0×53.3(66.6)	30.6	3.4X
0.42	0.010		11.4×15.2(19.0)	2.5	12X
0.72	0.018		6.6×8.8(11.1)	0.8	20X

#### 0.3~1.8X

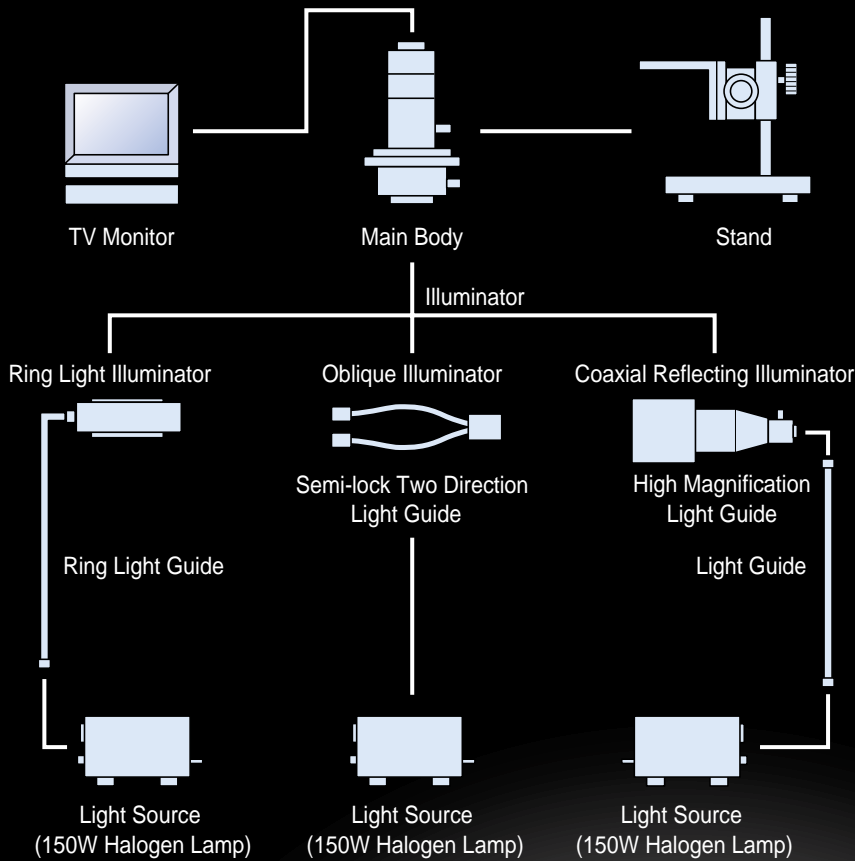
Magnification	N.A.	W.D.(mm)	Real Field of View DxW (diagonal length) on 1/2" CCD	Focal Depth	Magnification on the Monitor
0.3	0.007	136	16.0×21.3(26.6)	5.61	8.5X
1.0	0.025		4.8×6.4(8.0)	0.44	28X
1.8	0.045		2.6×3.5(4.4)	0.13	50X

Note) The above magnification can be achieved when using 9" monitor and 1/2" CCD camera.

### DZ101 Dimensions(mm)

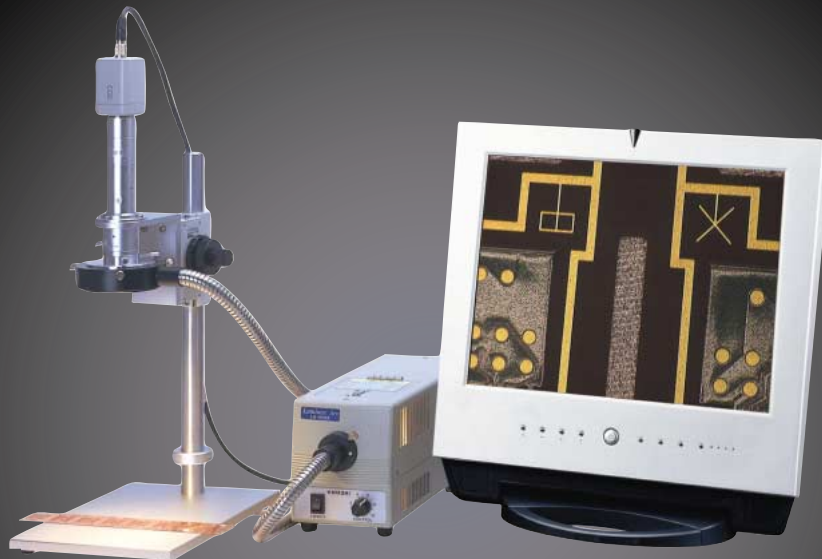


## DZ101 System Diagram



### OPTIONS

Name	Description
Stand	With Base and Pole
Bracket	Coarse and fine adjustable, fine adjustable 2mm
Coaxial Reflecting Illuminator	For high magnification 0.3X~1.8X Used together with Light Source NCL-2 and Light Guide
Light Source	150W Halogen Lamp with Power Stabilizer
Light Guide	1m, 1.5m, 2m, 3m
Ring Light Guide	1m length Optical Fiber, with ring light adapter



## Electronic Concerned

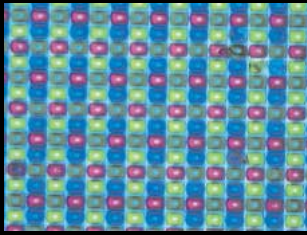
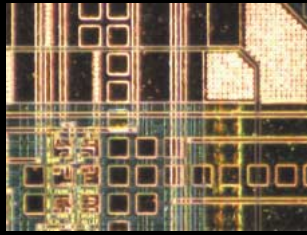


Image Sensor  
3000X Coaxial Reflecting Illumination



IC Chip  
2500X Ring Type Illumination

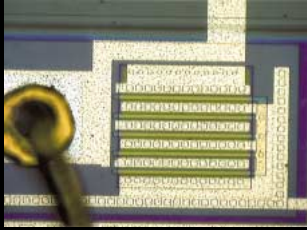
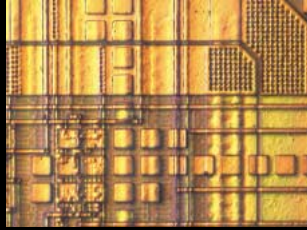
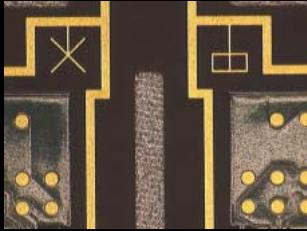


Image Sensor  
900X Coaxial Reflecting Illumination



IC Chip  
2500X Partial Shield Illumination

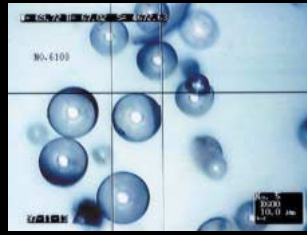


※BGA  
30X Ring Type Illumination

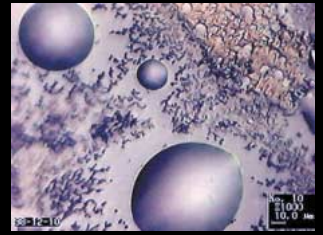


Laser Photo Diode  
600X Coaxial Reflecting Illumination

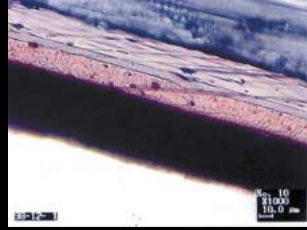
## Chemical•Material Concerned



Glass Balloon  
600X Coaxial Reflecting Illumination



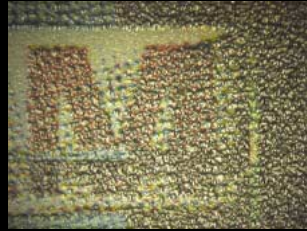
Lactic Acid  
1000X Coaxial Reflecting Illumination



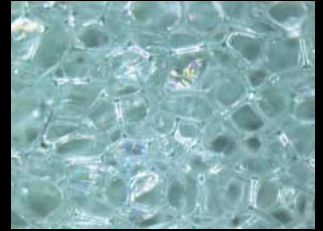
Multi-layer Film  
1000X Coaxial Reflecting Illumination



Fabric  
750X Ring Type Illumination



Printing Surface (Telephone Card)  
75X Partial Shield Illumination

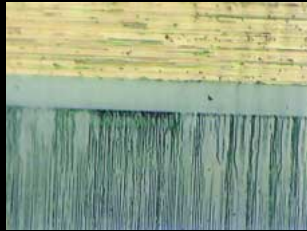


Sponge  
100X Ring Type Illumination

## Metal Concerned



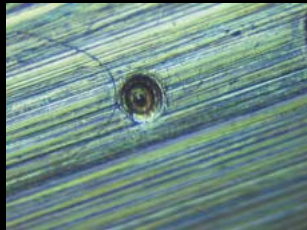
Text on CD  
150X Ring type Illumination



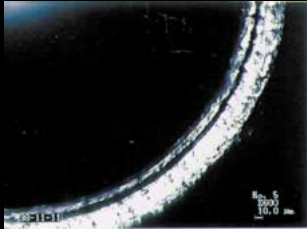
Metal Surface  
1000X Coaxial Reflecting Illumination



※The Tip of Fiber  
30X Ring Type Illumination



Metal Finishing  
2000X Coaxial Reflecting Illumination



The Tip of Ball Point Pen  
600X Coaxial Reflecting Illumination

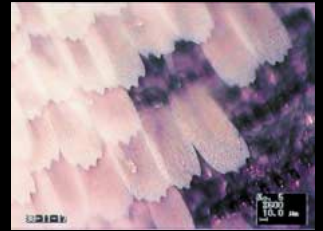


※100 Yen Coin  
90X Ring Type Illumination

## Biology Concerned



Flower  
500X Ring Type Illumination



Wing of Butterfly  
600X Coaxial Reflecting Illumination



Pollen  
75X Ring Type Illumination



Leaf  
75X Ring Type Illumination



Insect  
100X Ring Type Illumination



Water Flea  
300X Coaxial Reflecting Illumination

※mark refers those taken by DZ101.

• All specifications are subject to change without prior notice.

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