

# Delphi-X Observer

polarization

## HIGHLIGHTS

- Brightfield and polarization
- 360° rotatable analyzer and polarizer
- Bertrand lens for conoscopic observation
- Enhanced infinity corrected EIS optical system
- High contrast objectives with minimal aberrations
- Plan (Semi-)Apo strain free EIS or Plan objectives
- Super wide field SWF 10x/25mm eyepieces
- 100 W halogen illumination
- Quintuple nosepiece

## TECHNICAL SPECIFICATIONS

### EYEPIECES

- Super wide field SWF 10x/25 mm, Ø 30 mm tubes
- Extended wide field EWF 10x/22 mm, Ø 30 mm tubes (optional)

#### Three extra eyepieces for transmitted illumination:

- Super wide field SWF 10x/25 eyepiece with crosshairs with micrometer scale for Ø 30 mm tubes
- Super wide field SWF 10x/25 eyepiece with crosshairs for Ø 30 mm tubes
- Super wide field SWF 10x/25 eyepiece with grid for Ø 30 mm tubes

#### Three extra eyepieces for reflected illumination:

- Super wide field SWF 10x/22 eyepiece with crosshairs with micrometer scale for Ø 30 mm tubes
- Super wide field SWF 10x/22 eyepiece with crosshairs for Ø 30 mm tubes
- Super wide field SWF 10x/22 eyepiece with grid for Ø 30 mm tubes

### STANDARD HEAD

Siedentopf trinocular with 30° inclined tubes. Interpupillary distance adjustable between 47 and 78 mm. The trinocular standard head has an optical path selector (100:0 / 80:20 / 0:100). Diopter adjustment on both eyepieces

### ERGONOMIC TILTING HEAD

Optional ergonomic 0 to 35° tilting trinocular head supplied with SWF 10x/25 mm eyepieces, interpupillary distance between 47-78 mm and photo tube with a standard Ø 23.2 mm tube. The trinocular tilting head has an optical path selector (100:0 / 80:20 / 0:100). Diopter ± 5 adjustments on both eyepieces. **Also available:** a Siedentopf ergonomic tilting binocular head for Delphi-X Observer. Only with purchase of a new microscope

### NOSEPIECE

Revolving quintuple reversed nosepiece on ball-bearings with centering screws for objectives



● DX.2058-PLPOLRii

#### DX.2058-PLPOLI

639 (h) x 260 (w) x 479.5 (d) | CA. 23 kg

### ENHANCED INFINITY SYSTEM (EIS)

The enhanced infinity system (EIS) of the Delphi-X Observer™ consists of super wide field SWF 10x/25 mm eyepieces, high numerical aperture 45 mm parfocal objectives. This tube lens reduces the angle of the light rays passing through the optics and as a direct result significantly improves the chromatic aberration corrections and contrast. The objectives with larger diameter enable much higher numerical apertures improving the overall resolving power of the optical system

**For all these reasons the Delphi-X Observer™ offers superior optical performance for the most demanding applications**



● DX.5701-ADD

## OBJECTIVES

The following infinity corrected EIS objectives are supplied with or available for the Delphi-X Observer™:

|  |                      |                         |                        |                        |  |                                       |
|--|----------------------|-------------------------|------------------------|------------------------|--|---------------------------------------|
| Plan Semi-apo PL-SAPOLRi <sup>(2)</sup><br>strain-free | 5x/0.15,<br>WD 20 mm | 10x/0.30,<br>WD 11 mm   | 20x/0.45,<br>WD 3.0 mm |                        |  |                                       |
| Plan Apo PL-APOLRi <sup>(2)</sup><br>strain-free       |                      |                         |                        |                        | 50x/0.80,<br>WD 1 mm                   | 100x/0.90 <sup>(1)</sup><br>WD 1 mm   |
| Plan PL-POLi (BF/POL) <sup>(3)</sup><br>strain-free    | 4x/0.10,<br>WD 20 mm | 10x/0.25,<br>WD 10.2 mm | 20x/0.40,<br>WD 12 mm  | 40x/0.65,<br>WD 0.7 mm | 50x/0.95, <sup>(1)</sup><br>WD 0.19 mm | 100x/1.25 <sup>(1)</sup><br>WD 0.2 mm |

<sup>1)</sup> Optional

<sup>2)</sup> For models for polarization applications with incident illumination. No cover glass correction

<sup>3)</sup> For models for polarization applications without incident illumination. With 0.17 mm cover glass correction. All objectives are 60 mm parfocal and have a M25 x 0.7 mounting thread. All optics are anti-fungus treated and anti-reflection coated for maximum light throughput

## STAGE

Diameter 190 mm circular stage. 360° Rotatable with Vernier and two object clamps and an optional 30 x 30 mm X-Y mechanical stage

## CONDENSER

Height adjustable Abbe N.A. 1.25 condenser with iris diaphragm and 306° rotatable polarizer

## FOCUSING

Coaxial coarse and fine adjustment, 100 graduations, 1 µm precision, 100 µm per rotation, total travel range is approximately 35 mm. Supplied with an adjustable rack stop to prevent damage to sample and objectives. The coarse adjustments are equipped with friction control. The focusing knobs can be switched from left to right according to the user's preference

## ILLUMINATION

The Delphi-X Observer materials science microscope for polarization applications is equipped with epi and diasopic intensity adjustable 100 W halogen illumination with internal 100-240 Vac power supply. The diasopic halogen illumination comes with two push-in/push-out neutral density filters for smooth attenuation of the light intensity for all kinds of samples

## POLARIZATION

Supplied with 360° rotatable polarization filter, analyzer, Bertrand lens, 1 λ first red plate, 1/4 λ retardation plate, a quartz wedge

## REFLECTED ILLUMINATION ATTACHMENT

Up to six observation modules can be placed in the rotating structure. Comes with brightfield and brightfield with ND filter positions

## ICARE SENSOR

The unique iCare Sensor is developed to avoid unnecessary loss of energy. The illumination of the microscope automatically switches off shortly after microscopists step away from their position

## CARRYING GRIP

The carrying grip at the back of the microscope ensures safe transportation of the microscope and the integrated tool and holder make sure the right tool is always available

## PACKAGE CONTENT

Supplied with power cord, dust cover, a spare fuse, user manual and universal tool. All packed in a polystyrene box



● DX.2053-PLPOLi

| MODELS          | Fixed 30° Siedentopf head | Ergonomic tilting head | PL-POLi 4x/0.10 / 10x/0.25 / 20x/0.40 / 540x/0.65 objectives | PL-POLi 50x/0.95 / S100x/1.25 objectives | PL-SAPOLRi 5x/0.15 / 10x/0.30 / 20x/0.45 objectives | PL-APOLRi 50x/0.80 objective | PL-APOLRi S100x/0.90 objective | 100 W 12 V halogen Köhler illumination |
|-----------------|---------------------------|------------------------|--|--|---|------------------------------|--------------------------------|--|
| DX.2053-PLPOLRi | •                         |                        |  |  | •   | •                            | o                              | R and T*                               |
| DX.2058-PLPOLRi |                           | •                      |  |  | •   | •                            | o                              | R and T*                               |
| DX.2053-PLPOLi  | •                         |                        | •  | o  |   |                              |                                | T*                                     |
| DX.2058-PLPOLi  |                           | •                      | •  | o  |   |                              |                                | T*                                     |

All objectives are infinity corrected and EIS 60 mm parfocal

o = optional

\*R = reflected, T = transmitted

## ACCESSORIES AND SPARE PARTS

### EYEPIECES

|                   |  |
|-------------------|--|
| <b>DX.6010</b>    | Super wide field SWF 10x/25 mm eyepiece for Ø 30 mm tubes  |
| <b>DX.6210</b>    | Extended wide field EWF 10x/22 mm eyepiece for Ø 30 mm tubes (optional)                                    |
| <b>DX.6010-CM</b> | SWF 10x/25 eyepiece with crosshairs with micrometer scale (for transmitted illumination and Ø 30 mm tubes) |
| <b>DX.6010-C</b>  | SWF 10x/25 eyepiece with crosshairs (for transmitted illumination and Ø 30 mm tubes)                       |
| <b>DX.6010-SG</b> | SWF 10x/25 eyepiece with 20 x 20 grid (for transmitted illumination and Ø 30 mm tubes)                     |
| <b>DX.6210-CM</b> | SWF 10x/22 eyepiece with crosshairs with micrometer scale (for reflected illumination and Ø 30 mm tubes)   |
| <b>DX.6210-C</b>  | SWF 10x/22 eyepiece with crosshairs (for reflected illumination and Ø 30 mm tubes)                         |
| <b>DX.6210-SG</b> | SWF 10x/22 eyepiece with 20 x 20 grid (for reflected illumination and Ø 30 mm tubes)                       |
| <b>DX.6012</b>    | Wide field WF 12.5x/17.5 mm eyepiece for Ø 30 mm tube  |
| <b>DX.6015</b>    | Wide field WF 15x/16 mm eyepiece for Ø 30 mm tube  |
| <b>DX.6020</b>    | Wide field WF 20x/12 mm eyepiece for Ø 30 mm tube  |
| <b>DX.6099-L</b>  | Eye cup for eyepiece   |

### INFINITY CORRECTED OBJECTIVES

#### *Plan Semi-Apochromatic infinity corrected reflected polarization*

##### *PL-SAPOLRi, EIS 60 mm parfocal, M25 mounting thread\**

|                  |  |
|------------------|--|
| <b>DX.7905-R</b> | 5x/0.15 PL-SAPOLRi objective. WD 20 mm   |
| <b>DX.7910-R</b> | 10x/0.30 PL-SAPOLRi objective. WD 11 mm  |
| <b>DX.7920-R</b> | 20x/0.45 PL-SAPOLRi objective. WD 3.1 mm |

#### *Plan Apochromatic infinity corrected reflected polarization*

##### *PL-APOLRi, EIS 60 mm parfocal, M25 mounting thread\**

|                  |  |
|------------------|--|
| <b>DX.7950-R</b> | 50x/0.80 PL-APOLRi objective. WD 0.3 mm                  |
| <b>DX.7900-R</b> | S100x/0.90 PL-APOLRi oil-immersion objective. WD 1 mm*** |

#### *Plan infinity corrected transmitted polarization PL-POLi,*

##### *EIS 60 mm parfocal, M25 mounting thread\*\**

|                  |  |
|------------------|--|
| <b>DX.7904-T</b> | 4x/0.10 PL-POLi objective. WD 30 mm                      |
| <b>DX.7910-T</b> | 10x/0.25 PL-POLi objective. WD 10.2 mm                   |
| <b>DX.7920-T</b> | 20x/0.40 PL-POLi objective. WD 13 mm                     |
| <b>DX.7940-T</b> | S40x/0.65 PL-POLi objective. WD 0.7 mm***                |
| <b>DX.7950-T</b> | 50x/0.95 PL-POLi objective. WD 0.19 mm                   |
| <b>DX.7900-T</b> | S100x/1.25 PL-POLi oil-immersion objective. WD 0.2 mm*** |

\* Strain-free, no cover glass correction,

\*\* Strain-free, with 0.17 mm cover glass correction

\*\*\* Spring loaded

WD = working distance

### POLARIZATION ATTACHMENT

#### *Without incident illumination*

|                |   |
|----------------|---|
| <b>DX.9604</b> | Slider with quartz wedge plate                        |
| <b>DX.9608</b> | Slider with 0-360° rotatable analyzer, 0.1° divisions |
| <b>DX.9610</b> | Slider with Lambda plate first red                    |
| <b>DX.9612</b> | Slider with Lambda/4 plate                            |

### POLARIZATION ATTACHMENT

#### *With incident illumination*

|                  |   |
|------------------|---|
| <b>DX.9602-R</b> | Slider with rotatable polarizer                       |
| <b>DX.9608-R</b> | Slider with 0-360° rotatable analyzer, 0.1° divisions |

### CAMERA ACCESSORIES

|                |   |
|----------------|---|
| <b>DX.9810</b> | C-mount with 1 magnification for C-mount camera   |
| <b>DX.9835</b> | C-mount with high resolution relay 0.35x objective for 1/3 inch C-mount camera          |
| <b>DX.9850</b> | C-mount with high resolution relay 0.50x objective for 1/2 inch C-mount camera          |
| <b>DX.9863</b> | C-mount with high resolution relay 0.63x objective for 2/3 inch C-mount camera          |
| <b>AE.5130</b> | Universal SLR-adaptor with built-in 2x lens for standard 23.2 mm tube. Needs T2 adapter |
| <b>AE.5025</b> | T2 adapter for Nikon D SLR-digital camera   |
| <b>AE.5040</b> | T2 adapter for Canon EOS SLR-digital camera   |

### MISCELLANEOUS

|                    |   |
|--------------------|---|
| <b>DX.5701-ADD</b> | Siedentopf ergonomic tilting binocular head option for Delphi-X Observer. Only with purchase of a new microscope. Add the DX.5701-ADD price to a Delphi-X Observer model (DX.1153-xxxx / DX.2153-xxxx / DX.3153-xxxx) to have the price of a configuration with ergonomic binocular tilting head and order the microscope as DX.x153-xxxx + DX.5701-ADD |
| <b>DX.9704</b>     | Yellow filter for lamphouse, diameter 45 mm   |
| <b>DX.9961</b>     | 100 Watt 12 V halogen bulb for Delphi-X Observer (revision-2 models)  |
| <b>AE.5216</b>     | Fuses 5A 250 V, per 10 pcs. models with 100 W halogen   |
| <b>DX.9522</b>     | Optional 30 x 40 mm X-Y mechanical stage for polarization microscopes   |

### DISPOSABLES

|                |   |
|----------------|---|
| <b>PB.5245</b> | Lens cleaning paper, 100 sheets per pack  |
| <b>PB.5255</b> | Immersion oil, 25 ml. Refraction index n = 1.515  |
| <b>PB.5274</b> | Isopropyl alcohol 99%, 200 ml   |
| <b>PB.5275</b> | Cleaning kit: lens fluid, lint free lens tissue paper, brush, air blower, cotton swabs  |
| <b>PB.5276</b> | Microscope maintenance and servicing kit, 16pcs: cleaning brush, 6 pcs screwdriver set, air blower, 3 pcs Allen key (1.5, 2, 2.5 mm), lens cleaning fluid 20 ml, cleaning cloth 140 x 140 mm, 100 pcs lens tissue sheets, tube of maintenance grease, 10 ml bottle of oil, packed in a nice toolbox |



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