Olympus System Microscope Series BH

In response to numerous demands from the scientific and industrial communities, OLYMPUS, a leading manufacturer of quality microscopes and other precision instruments, takes great pride in introducing the new System Microscope Series BH.

Development of the Series BH microscopes has been accomplished by the joint efforts of industrial designers and the experienced OLYMPUS optical and mechanical engineering staff, with particular emphasis on advanced design, excellent durability and unsurpassed performance, and profiting from the innovative technology OLYMPUS has applied in the manufacture of the Universal Research Microscope Model VANOX.

The Series BH offers a choice of three basic stands, Models BHA, BHB and BHC. The Model BHA features an interchangeable nosepiece, an interchangeable 30 W low voltage light source and a high/low magnification selector, and the Model BHB features an interchangeable 30 W low voltage light source and a high/low magnification selector, while the Model BHC has a fixed 15 W low voltage light source and no high/low magnification selector.

CHARACTERISTIC FEATURES

1. Outstanding Interchangeability of System Components
   A wide range of principal components such as microscope stands, observation tubes, objectives and eyepieces, stages, condensers and other accessories for various microscopic methods makes the Series BH one of the most versatile system microscopes available.

A broad variety of modular, building-block systems provides an ideal way to select the microscopic and photomicrographic combinations most suitable for your requirements, to keep your budget at a realistic figure, and to further expand the capabilities of the microscope by adding reasonably priced accessories tailored to specific purposes.

2. Excellent Performance and Durability
   The unsurpassed performance of the Series BH is based on many innovations such as coarse and fine adjustments on a common guideway throughout the entire focusing range of 40 mm, easy-to-operate Koehler type illumination with a transformer built in the base, a field of view more than twice as large as the one with a standard microscope, etc.

Every part of the Series BH components and accessories is designed with emphasis on durability; for instance, smooth running, wear resistant ball guides are employed in the focusing and stage operation mechanisms, and the light source built in the base incorporates a thyristor circuit for stabilization of the power supply.

3. Versatile Camera System
   The System Camera Model PM-10-A with automatic film advance facilitates your photomicrographic work, solving difficult color temperature adjustment encountered in photomicrography. A unique color temperature metering and regulating device (CTR) balances the color temperature of the film with the color temperature of the light source. A regulation device for ASA speeds, incorporated in the control unit, permits fine adjustment of ASA film speeds in a 4 increment range. This modular system permits rapid interchange of 35 mm, 3½" x 4¼" and 4½" x 5" size films.

4. High Quality Optics
   The essential parts of any microscope are its optical elements, a major part of which are the objectives. A choice of Achromats, Fluorites, Apochromats and Plan Apochromats is available.

The eyepieces as well as the objectives, available with the Series BH, standard or optional, cover a wide area of specialized uses for observation and photomicrography. Among the eyepieces designed to further magnify the primary image from the objective, the Photo Eyepieces FK are exclusively computed for photomicrographic application.

5. Modern Functional Design
   A "square-line" silhouette characterizes the external appearance of the Series BH. This "square-line" design not only provides excellent stability but also permits rigid attachment of accessories without tools. Arm rests cover the base for comfortable operation. Rigidly constructed for long hard work.
VARIOUS COMPONENTS OF THE MODEL BHA

- Eyeiece
- Vertical Phototube
- Observation Tube
- Light Path Selector Lever
- Nosepiece Clamping Screw
- Quintuple Revolving Nosepiece
- Objective
- Specimen Holder
- Square Mechanical Stage
- Achromatic/Aplanatic Condenser
- Tension Adjustment Ring
- Coarse Adjustment Knob
- Fine Adjustment Knob
- Auxiliary Lens
- Low Drive Stage Control Knobs
- High/Low Magnification Selector Lever
- Filter Mount
- Field Iris Diaphragm
- Light Source
- Voltage Adjustment Lever
- Main Switch
- Base
- Voltmeter
- Pilot Lamp
Excellent Performance

The Series BH surpasses conventional microscopes in its exceptionally functional design, as mentioned below on the Model BHA.

- **OBSERVATION TUBE**
  - A trinocular tube (inclination 45°) is standard for the Model BHA, for observation and photomicrography. The maximum field number is 21. The tube is rotatable through 360°, with clamping screw, permitting fatigue-free observation of an exceptionally large field of view.
  - A unique coating process of the prisms in the observation tube reduces light loss to a negligible amount, thus increasing light transmission by more than twice as much as with conventional observation tubes.
  - Interpupillary distance adjustment from 53mm to 72mm. A diopter adjustment ring is provided on both eyepiece tubes to maintain objective parfocality at different interpupillary distances.
  - A light path selector lever directs either 100% of the light to the observation tube, or 80% to the phototube and 20% to the observation tube.
  - A circular dovetail mount permits interchange of other observation tubes with ease. A binocular tube and a super widefield observation tube are available optionally.

- **REVOLVING NOSEPICE**
  - Quintuple revolving nosepiece on ball races with dust-proof carrier. Smooth rotation maintains parfocality of all five objectives. The click stop is positive in action, so that each objective comes to a common center when rotated into working position.

  - A dovetail slide mount of the microscope stand Model BHA-F permits removal of the quintuple nosepiece which facilitates interchange of the standard objective set with optional objectives or vice versa, according to various microscopic applications, without removal of the objectives from the nosepiece.
  - Objectives for different methods of microscopic observation can easily be mounted on the extra nosepiece in accordance with your specific requirements. These objectives include plan apochromatic, phase contrast, metallurgical, and differential interference contrast objectives.

- **STAGE**
  - The standard stage is a large, graduated, square mechanical stage, 142mm x 140mm, on dovetail stage bracket, with clamping lever and large coaxial low drive controls on the right hand side.
  - The traversing area is 52mmx 76mm, with low positioned, coaxial control knobs. Traversing movements on ball guides, with verniers reading to 0.1mm.
  - Large specimen holder, capable of simultaneous use of two 26mm x 76mm specimen slides, is removable to obtain a large unobstructed stage surface.
  - The dovetail stage bracket permits easy attachment or removal of the stage. The horizontal dovetail mount facilitates interchange of optional stages in accordance with various observation methods.
Excellent Performance

CUTAWAY VIEW OF THE OPTICAL SYSTEM
FOCUSING ADJUSTMENTS

- The dual coarse and fine focusing knobs are coaxial and designed to share a common guide-way to give a smooth, even motion throughout the whole range of 40mm.
- The coarse adjustment knobs are 36mm in diameter for easy operation.
- The fine focusing adjustment is graduated in minimum increments of 2µ and incorporates special reduction gears for smooth operation and lifetime reliability.
- The automatic pre-focusing lever is provided to prevent possible contact between specimen and objective as well as to simplify coarse focusing. The lever is locked after coarse focus has been accomplished. This prevents further upward travel of the stage and automatically provides a limiting stop if the stage is lowered and then raised again. The automatic pre-focusing lever does not restrict fine focusing.
- A tension adjustment ring is provided next to the right hand coarse adjustment knob. With this device the tension of the coarse adjustment is freely adjustable for either heavy or light movement depending on operator preference.

CONDENSERS

- A ring mount with clamping screw and centering device accepts interchangeable condensers, standard or optional. Rack and pinion height adjustment, with condenser height displacement up to 32mm.
- The standard condensers include the achromatic/aplanatic condenser N.A. 1.40, the Abbe condenser N.A. 1.25, and the super widefield condenser N.A. 0.95, depending on the model of your choice, for optimum illumination of the specimen from low power 4X to oil immersion 100X objectives. Furthermore, the achromatic/aplanatic condenser is corrected for chromatic aberration, spherical aberration and curvature of field, and is provided with a graduated aperture iris diaphragm, decenterable for oblique illumination. It is recommended for work with high quality apochromats and plan apochromats.
- Either one of the condensers, above, is easily replaceable with other condensers such as darkfield, phase contrast, etc.

BASE

- The dust-proof square base incorporates a high/low magnification selector system and a low voltage transformer. The "on-off" switch, voltmeter and sliding control lever for continuously variable light intensity are built in the base for effortless operation.
- The high/low magnification selector lever enables Koehler type illumination throughout the whole range of objective powers, from 4X to 100X, without manipulation of the auxiliary lens or interchange of condensers.
- The in-base illuminator serves to direct light of the appropriate quality and intensity, emitted from a pre-centered tungsten bulb, towards the microscopic object to ensure even illumination of the field. This in turn results in photomicrographic negatives of optimum contrast, brilliance and uniformity.
- The built-in transformer, variable from 0V to 10V, incorporates a thyristor circuit in its rheostat for smooth fine adjustment of light intensity.
- The standard light source incorporates a 30 watt pre-centered tungsten filament bulb, provided with a socket for positive contact, eliminating the problems of defective contact and over heating. Interchangeable with optional light sources such as high intensity halogen bulbs, mercury burners and electronic flash bulbs.
# System Chart of Interchangeable Components

<table>
<thead>
<tr>
<th>Projection screen</th>
<th>Trinocular tube (30°)</th>
<th>Trinocular tube (45°)</th>
<th>Super wide field trinocular tube (30°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monocular tube with phototube</td>
<td>Vertical phototube</td>
<td>Binocular tube (30°)</td>
<td>Binocular tube (45°)</td>
</tr>
<tr>
<td>Trinocular tube (30&quot;)</td>
<td>Binocular tube for polarized light (30°)</td>
<td>Trinocular tube for polarized light (30°)</td>
<td></td>
</tr>
<tr>
<td>Differential interference contrast attachment for transmitted light</td>
<td>Barrier filter attachment (simple type)</td>
<td>Barrier filter attachment</td>
<td>Magnification changer</td>
</tr>
<tr>
<td>Polarizing attachment</td>
<td>Simple analyzer</td>
<td>Drawing attachment</td>
<td>Dual observation tube</td>
</tr>
<tr>
<td>Compensators</td>
<td></td>
<td>Objectives</td>
<td>Centering revolving nosepiece for polarized light</td>
</tr>
<tr>
<td>Circular rotatable stage, graduated</td>
<td>Circular rotatable stage, ungraduated</td>
<td>Square rotatable mechanical stage with horizontal drive controls</td>
<td>Quintuple revolving nosepiece</td>
</tr>
<tr>
<td>Removable mechanical stage</td>
<td>Plain stage</td>
<td>Square mechanical stage with low drive controls for fluorescence</td>
<td></td>
</tr>
<tr>
<td>Removable mechanical stage for polarized light</td>
<td>Polarizing stage</td>
<td>Square mechanical stage with left-hand low drive controls</td>
<td>Square mechanical stage with right-hand low drive controls</td>
</tr>
<tr>
<td>Low power condenser</td>
<td>Super widefield condenser</td>
<td>Abbe condenser</td>
<td>Achromatic/aplanatic condenser</td>
</tr>
<tr>
<td>Differential interference contrast condenser</td>
<td>Polared light condenser</td>
<td>Immersion darkfield condenser</td>
<td>Dry darkfield condenser</td>
</tr>
<tr>
<td>Long working distant phase contrast condenser</td>
<td>Fluorescence phase contrast condenser</td>
<td>Abbe phase contrast condenser</td>
<td>Achromatic/aplanatic phase contrast condenser</td>
</tr>
<tr>
<td>Eyepieces</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Objective Image: A microscope system chart illustrating various interchangeable components.*
Technical Descriptions

**MICROSCOPE STANDS**
Extremely sturdy make, functional design, ripple tone finish, acid resistant. The differences between these three stands are the interchangeability of nosepiece and/or light source with the Models BHA and BHB, respectively.

**LIGHT SOURCES**
The light sources available with the stands Models BHA-F and BHB-F are interchangeable.
<table>
<thead>
<tr>
<th>Models</th>
<th>BHA-F</th>
<th>BHB-F</th>
<th>BHC-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation tube mount</td>
<td>Circular dovetail, permitting tube rotation through 360°.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revolving nosepiece</td>
<td>Large, quintuple nosepiece, removable.</td>
<td>Large, quintuple nosepiece, not removable.</td>
<td></td>
</tr>
<tr>
<td>Stage mount</td>
<td>Horizontal sliding dovetail.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coarse and fine adjustment</td>
<td>· Coaxial adjustment knobs.</td>
<td>· Coarse adjustment with rack-and-pinion; fine adjustment with special reduction gear, graduated in increments of 2μ.</td>
<td>· Coarse adjustment with rack-and-pinion; fine adjustment with special reduction gear, graduated in increments of 2μ.</td>
</tr>
<tr>
<td></td>
<td>· Focusing range for both coarse and fine adjustments 40mm, on ball guides.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>· Automatic pre-focusing lever.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>· Tension adjustment ring for coarse adjustment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condenser mount</td>
<td>· Condenser height adjustment on rack-and-pinion, range 32mm.</td>
<td>· Condenser interchangeable in ring mount.</td>
<td>· Condenser interchangeable in ring mount.</td>
</tr>
<tr>
<td></td>
<td>· Condenser height adjustment on rack-and-pinion, range 32mm.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>· Auxiliary lens removable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filter mount</td>
<td>45mm diameter filters and a polarizer can be mounted on the light exit on the base.</td>
<td>An analyzer can be inserted below the observation tube.</td>
<td></td>
</tr>
<tr>
<td>Illuminating system</td>
<td>· In-base illuminator, with high/low magnification selector.</td>
<td></td>
<td>· In-base illuminator without magnification selector.</td>
</tr>
<tr>
<td>Light source</td>
<td>30 watt pre-centered tungsten filament bulb, interchangeable with various light sources.</td>
<td>15 watt pre-centered tungsten filament bulb, cordless, not interchangeable.</td>
<td></td>
</tr>
<tr>
<td>Transformer built into base</td>
<td>· Incorporates a thyristor circuit for fine voltage adjustment.</td>
<td></td>
<td>· Low voltage variable from 0V to 8V.</td>
</tr>
<tr>
<td></td>
<td>· Low voltage for illuminator variable from 0V to 10V.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>300mm (height) x 215mm (width) x 280mm (length)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weights</td>
<td>5.6 kg</td>
<td>5.9 kg</td>
<td>5.7 kg</td>
</tr>
</tbody>
</table>

**Light sources**
- 100 watt halogen lamp house Model BH-LSH
- 30 watt tungsten lamp house Model BH-LH

**Centeration**
- Centerable
- Pre-centered

**Collector**
- Aspherical lens
- Focus adjustable
- Pre-focused

**Filters**
- Various filters available
- Frosted filter built-in

**Bulbs**
- JC12V 100 watt halogen bulb
- 30 watt pre-centered tungsten filament bulb LS30
- 15 watt pre-centered tungsten filament bulb LS15

**Microscope stands**
- BHA-F, BHB-F
- BHC-F
Technical Descriptions
**OBSERVATION TUBES**

The observation tubes are designed to match the streamlined appearance of the microscope stands for ease of operation, reliable performance and outstanding durability. The binocular and trinocular tubes are available in 30° or 45° inclination, standard or optional.

A 30°-inclined super widefield tube is also available to scan a flat field of view 260% larger than the standard WF widefield eyepieces. This is very convenient in biological research as well as routine work, for it will increase the efficiency and speed of microscopic work without undesirable eyestrain.

<table>
<thead>
<tr>
<th>Models</th>
<th>SW trinocular tube (30°) BH-SWTR</th>
<th>Trinocular tube (45°) BH-TR45</th>
<th>Trinocular tube (30°) BH-TR30</th>
<th>Binocular tube (45°) BH-BI45</th>
<th>Binocular tube (30°) BH-BI30</th>
<th>(Vertical phototube BH-PT)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum field number***</td>
<td>29</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diopter adjustment</td>
<td>Adjustable diopter setting on SW eyepieces</td>
<td>Both observation eyepiece tubes equipped with variable diopter adjustment, compensating for tube length variations.</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convergent angle</td>
<td>0° (parallel optical axes in binocular tubes)</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpupillary distance adjustment</td>
<td>56–74mm, graduated</td>
<td>53–72mm, graduated</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light path selection</td>
<td>Two position selector lever; to direct 100% of the light to observation tube or 20% to observation tube and 80% to the phototube.</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attachment</td>
<td>Circular dovetail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation</td>
<td>Rotatable through 360°, on circular dovetail.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate adapters</td>
<td>Attachable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**
- *Regular size eyepieces can be used in conjunction with an eyepiece adapter, provided.
- **A vertical phototube is in preparation.
- ***The field number is used in the calculation of the visual field diameter.

\[
\text{Diameter in mm} = \frac{\text{Field number of eyepiece}}{\text{Power of objective in use}}
\]

**INTERMEDIATE ADAPTERS**

- **Magnification Changer Model AH-CA**
  The Model AH-CA incorporates 1X, 1.25X, 1.5X and PH (phase contrast) positions to permit magnification changes without change of objectives or eyepieces, as well as easy, accurate alignment of light annulus and phase annulus. Magnifications of 1X, 1.25X and 1.5X are provided on a rotating turret. Centering telescope built in "PH" position, focusable.

- **Barrier Filter Attachment Model AH-FA**
  UV barrier filter attachment, mounted between nosepiece and observation tube, with revolving turret containing five apertures, permanently mounted UV barrier filters L-410 and AFC on slide, and Y-495, O-515, O-530 and R-610 built in turret.
**Technical Descriptions**

**MECHANICAL STAGES**
The mechanical stages available with the Series BH include a large square rotatable stage and three non-rotatable square stages. The non-rotatable stages are provided with low drive coaxial controls on ball guides and rack-and-pinion, while the rotatable mechanical stage has horizontal coaxial drive controls on ball guides and rack-and-pinion for north-south movement; and dovetail guide and leadscrew for east-west movement, rotatable through 360°, convenient for trimming or framing for photomicrography or oblique illumination and differential interference contrast observation.

**CONDENSERS**
The condenser mount is a ring mount equipped with a centering device and rack-and-pinion height adjustment for the interchangeable condensers tabulated on opposite page. The condensers are designed to slip into the ring mount and are locked with a clamping knob. They permit rapid interchange for different modes of microscopy, e.g. bright-field, darkfield, immersion or dry, super widefield, phase contrast, from low to high power objectives.
<table>
<thead>
<tr>
<th>Models</th>
<th>Square rotatable mechanical stage with horizontal drive controls BH-SH</th>
<th>Square mechanical stage with right-hand low drive controls BH-SV</th>
<th>(Square mechanical stage with left-hand low drive controls BH-SVL*)</th>
<th>(Square mechanical stage with low drive controls for fluorescence BH-SVF**)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>135 x 134mm</td>
<td>142 x 140mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traversing area</td>
<td>44 x 76mm, with verniers reading to 0.1mm</td>
<td></td>
<td>52 x 76mm, with verniers reading to 0.1mm</td>
<td></td>
</tr>
<tr>
<td>Drive controls</td>
<td>North-south movement on ball guides and rack-and-pinion; East-west movement on dovetail guide way, leadscrew</td>
<td>North-south and east-west movements on ball guides, and rack-and-pinion.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specimen holder</td>
<td>Removable to obtain large unobstructed surface.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation</td>
<td>Rotatable</td>
<td>Non-rotatable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dovetail mounting</td>
<td>Rotatable</td>
<td>Non-rotatable</td>
<td>Horizontal sliding dovetail mount</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: * In preparation. ** In preparation. With exclusive longitudinal grooves to reduce oil contact of specimen slides with stage surface.

<table>
<thead>
<tr>
<th>Models</th>
<th>Achromatic/aplanatic condenser BH-AAC</th>
<th>Abbe condenser BH-CD</th>
<th>Super widefield condenser BH-SWC</th>
<th>Abbe type phase contrast condenser BH-PC</th>
<th>Immersion darkfield condenser BH-DCW</th>
<th>Dry darkfield condenser BH-DCD</th>
<th>(Low power condenser BH-ULC*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Achromatic/aplanatic type</td>
<td>Abbe type</td>
<td>Cardiod type</td>
<td>Single lens</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lens assembly</td>
<td>5 elements in 3 groups</td>
<td>2 elements in 2 groups</td>
<td>2 elements in 1 group</td>
<td>1 element</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N.A.</td>
<td>1.40</td>
<td>1.25</td>
<td>0.95</td>
<td>1.25</td>
<td>1.40–1.20 (oil)</td>
<td>0.92–0.80 (dry)</td>
<td>0.1</td>
</tr>
<tr>
<td>Objective power</td>
<td>4X–100X (SW: 10X–100X)</td>
<td>4X–100X</td>
<td>SW: 4X–100X</td>
<td>4X–100X (PC: 10X–100X)</td>
<td>10X–100X</td>
<td>10X–40X</td>
<td>1.3X–2X</td>
</tr>
<tr>
<td>Aperture iris diaphragm</td>
<td>Numerical aperture scale</td>
<td>Scale for iris diaphragm diameter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Focal length</td>
<td>12mm</td>
<td>13mm</td>
<td>17.5mm</td>
<td>13mm</td>
<td>7.8mm</td>
<td>12mm</td>
<td>37mm</td>
</tr>
<tr>
<td>Condenser mount</td>
<td>Ring mount</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>Oblique illumination</td>
<td></td>
<td>Centerable annular aperture</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks: *The low power condenser is in preparation.
Photomicrographic Camera Systems

The PM-10 System Camera combines the features and advantages of many separate conventional attachment cameras, ranging from 35 mm camera back to 4" x 5" film holders. The Model PM-10 consists of two basic units—a fully automatic version Model PM-10-A and a popular manual version Model PM-10-M.

The modular design concept of the system camera permits easy interchangeability of many accessories. When these modular accessories are attached to the automatic or manual photomicrographic bodies in accordance with your requirements, sharply focused pictures on standard 35 mm film, 3½" x 4½" Polaroid film or 4" x 5" size film can easily be obtained. The data imprinting 35 mm camera back can be easily attached on the exposure body. Once in place, the back enables the user to imprint information such as numbers, symbols, etc., on the film.

The Model PM-10-M and the Attachment Camera Model PM-6 incorporate a light measuring port to accept the exposure and color temperature probes of the Exposure Meter Model EMM-VI.
<table>
<thead>
<tr>
<th>Models</th>
<th>PM-10-35A</th>
<th>PM-10-35M</th>
<th>PM-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
<td>- Automatic exposure body PM-PBA</td>
<td>- Manual exposure body PM-PBM</td>
<td>- 35mm attachment camera,</td>
</tr>
<tr>
<td></td>
<td>- Adapter for 35mm camera back with automatic</td>
<td>- Adapter for 35mm camera back with manual</td>
<td>comprising manual exposure</td>
</tr>
<tr>
<td></td>
<td>film advance PM-D35A</td>
<td>film advance C-35</td>
<td>body</td>
</tr>
<tr>
<td></td>
<td>- 35mm camera back with automatic film</td>
<td>- 35mm camera back with manual film advance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>advance C-35A</td>
<td>C-35</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Control unit for fully automatic</td>
<td>- Others: Focusing telescope, Focusing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35mm camera back PM-CBA</td>
<td>magnifier, Eyepiece adapters, Filters.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Others: Focusing telescope, Focusing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>magnifier, Eyepiece adapters, Filters.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>35mm camera back</th>
<th>Automatic film advance with built-in motor.</th>
<th>Manual film advance.</th>
<th>Information imprinting device, self-setting frame counter, rewinding knob, film size 24mm x 36mm.</th>
</tr>
</thead>
</table>

| Light path selection | 3-position light path selector knob for observation, observation-and-photography, and exposure measurement. |                                               |                                               |

<table>
<thead>
<tr>
<th>Exposure &amp; color temperature controls</th>
<th>The control unit is a console type with switches for automatic exposure, time exposure and flash synchronization; ASA film speed selector dial for different films from ASA 6 to ASA 3200; ASA fine regulation dial, and zero-resetting color temperature meter. Fine adjustment of ASA film speed 0.75, 0.85, 1, 1.2, 1.5. Automatic compensation for reciprocity failure.</th>
<th>The manual exposure body is provided with a light measuring port to accept the exposure meter Model EMM-VI which facilitates the determination of correct exposure time and color temperature.</th>
<th>The exposure meter Model EMM-VI with direct reading scales for 35mm exposure measurements (High: 1/250–1/2 sec. Low: 1/2–32 sec.); for large formats (High: 1/30–4 sec. Low: 4–128 sec.) Color temperature meter for light balancing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shutter times</td>
<td>Automatic exposure range 32 min. to 1/100 sec. Push button for automatic shutter release, to eliminate shutter vibration.</td>
<td>B and 1 sec. to 1/250 sec. with integrated mechanical shutter in vibration proof rubber mount.</td>
<td></td>
</tr>
<tr>
<td>Large format attachments</td>
<td>Polariod 3¾&quot; x 4¼&quot;, 4&quot; x 5&quot; sheet film holders, film pack holder.</td>
<td></td>
<td>Not available.</td>
</tr>
</tbody>
</table>

Not available.
Optical Characteristics

In keeping with the varied requirements of the users, Olympus makes available objectives of high resolution from 1.3X to 100X magnifications. They include Achromats, Plan Achromats, Fluorites, Apochromats, Plan Apochromats and Super Widefield Plan Achromats. Especially, the Plan Apochromats are capable of producing a flat image to the edge of the field, with excellent resolution, free of field curvature. Chromatic aberration is corrected for three colors, aplanatically aberration for two colors. The highest class suitable for histological use.

All eyepieces are computed to match the objectives for full chromatic and distortion correction. They are Compensating, Flat Field High-Eyepoint, Super Widefield, Photo Eyepieces, etc.

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>Initial Magnification</th>
<th>Numerical Aperture</th>
<th>Free Working Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achromats</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4X</td>
<td>0.10</td>
<td>0.40</td>
<td>5.40</td>
</tr>
<tr>
<td>10X</td>
<td>0.25</td>
<td>1.30</td>
<td>0.11</td>
</tr>
<tr>
<td>20X</td>
<td>0.40</td>
<td>1.30</td>
<td>0.11</td>
</tr>
<tr>
<td>40X</td>
<td>0.65</td>
<td>1.30</td>
<td>0.11</td>
</tr>
<tr>
<td>60X</td>
<td>0.80</td>
<td>1.30</td>
<td>0.11</td>
</tr>
<tr>
<td>100X (oil)</td>
<td>1.30</td>
<td>1.30</td>
<td>0.11</td>
</tr>
<tr>
<td>S-40X (spring)</td>
<td>0.65</td>
<td>1.30</td>
<td>0.11</td>
</tr>
<tr>
<td>S-60X (spring)</td>
<td>0.80</td>
<td>1.30</td>
<td>0.11</td>
</tr>
<tr>
<td>S-100X (spring, oil)</td>
<td>1.30</td>
<td>1.30</td>
<td>0.11</td>
</tr>
<tr>
<td>I-100X (iris diaphragm)</td>
<td>1.30</td>
<td>1.30</td>
<td>0.11</td>
</tr>
<tr>
<td>No cover Achrom 40X (for use without cover glass)</td>
<td>0.65</td>
<td>1.30</td>
<td>0.11</td>
</tr>
<tr>
<td>Fluorites (Semi apochromats)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FL S-40X (spring)</td>
<td>0.75</td>
<td>0.10</td>
<td>0.30</td>
</tr>
<tr>
<td>FL S-60X</td>
<td>0.75</td>
<td>0.10</td>
<td>0.30</td>
</tr>
<tr>
<td>FL S-100X (spring, oil)</td>
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<td>0.10</td>
<td>0.30</td>
</tr>
<tr>
<td>No cover FL 40X (for use without cover glass)</td>
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<td>0.10</td>
<td>0.30</td>
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<tr>
<td>Phase Contrast</td>
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</tr>
<tr>
<td>Achromats</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>10X</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>20X</td>
<td>0.40</td>
<td>0.40</td>
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<tr>
<td>S-40X (spring)</td>
<td>0.65</td>
<td>0.65</td>
<td>0.65</td>
</tr>
<tr>
<td>S-100X (spring, oil)</td>
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<td>1.30</td>
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<tr>
<td>Fluorites (Semi apochromats)</td>
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</tr>
<tr>
<td>FL S-40X (spring)</td>
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<td>0.75</td>
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<tr>
<td>FL S-100X (spring, oil)</td>
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<td>1.30</td>
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<tr>
<td>Apochromats</td>
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<tr>
<td>Apo 40X (spring, dry, correcting collar)</td>
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<tr>
<td>Apo 40X (spring, oil, iris diaphragm)</td>
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<tr>
<td>Plan Achromats</td>
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</tr>
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<td>Plan 1.3X</td>
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<tr>
<td>Plan 2X</td>
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<td>0.05</td>
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<tr>
<td>Plan 4X</td>
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<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td>Plan 10X</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>Plan 20X (spring)</td>
<td>0.40</td>
<td>0.40</td>
<td>0.40</td>
</tr>
<tr>
<td>Plan 40X (spring)</td>
<td>0.65</td>
<td>0.65</td>
<td>0.65</td>
</tr>
<tr>
<td>Plan 100X (spring, oil)</td>
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<td>1.25</td>
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<td>Plan Apochromats</td>
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</tr>
<tr>
<td>Plan Apo 100X</td>
<td>(in preparation)</td>
<td>(in preparation)</td>
<td>(in preparation)</td>
</tr>
<tr>
<td>Plan Apo 100X</td>
<td>(in preparation)</td>
<td>(in preparation)</td>
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<tr>
<td>Plan Apo 100X</td>
<td>(in preparation)</td>
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<td>(in preparation)</td>
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EYEPICES

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<tr>
<td>BiK5X</td>
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<tr>
<td>K20X</td>
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<tr>
<td>BiK20X</td>
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<tr>
<td>Widefield</td>
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</tr>
<tr>
<td>WF 10X</td>
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</tr>
<tr>
<td>WF 10XMicro (with micrometer 10/100mm)</td>
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<tr>
<td>WF 15X</td>
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<td>High Eyepoint Widefield</td>
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<td>H.E.P. BiWF 10X</td>
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<tr>
<td>Super Widefield</td>
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<td>BISW 7X</td>
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<tr>
<td>FK 2.5X</td>
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</tr>
<tr>
<td>FK 3.3X</td>
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<tr>
<td>FK 5X</td>
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<td>FK 6.7X</td>
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</table>
## Combinations of Various Components

<table>
<thead>
<tr>
<th>Components</th>
<th>Models</th>
<th>BHA</th>
<th>BHB</th>
<th>BHC</th>
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</thead>
<tbody>
<tr>
<td>Microscope stand</td>
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<tr>
<td>BHA-F</td>
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</tr>
<tr>
<td>BHB-F</td>
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</tr>
<tr>
<td>BHC-F</td>
<td>•</td>
<td>•</td>
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</tr>
<tr>
<td>Quintuple revolving nosepiece</td>
<td>BH-RE</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>30 watt tungsten lamp house</td>
<td>BH-LH</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Tungsten bulb 6V, 30W</td>
<td>LS30</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Tungsten bulb 6V, 15W</td>
<td>LS15</td>
<td>•</td>
<td>•</td>
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</tr>
<tr>
<td>Binocular tube (45°)</td>
<td>BH-BI45</td>
<td>•</td>
<td>•</td>
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<tr>
<td>Trinocular tube (45°)</td>
<td>BH-TR45</td>
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<tr>
<td>Mechanical stage</td>
<td>BH-SV</td>
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<td>Abbe condenser</td>
<td>BH-CD</td>
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<tr>
<td>Ach/Apla. condenser</td>
<td>BH-AAC</td>
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<tr>
<td>Achromat 4X</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achromat 10X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achromat S-40X (spring)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achromat S-100X (spring, oil)</td>
<td></td>
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</tr>
<tr>
<td>Plan Achromat 4X</td>
<td></td>
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<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Plan Achromat 10X</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Plan Achromat 20X (spring)</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Plan Achromat 40X (spring)</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Plan Achromat 100X (spring, oil)</td>
<td></td>
<td>•</td>
<td>•</td>
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</tr>
<tr>
<td>Eyepieces, H.E.P. BiWF10X, paired</td>
<td></td>
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<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Photo eyepiece FK5X</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Filter (45C)</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Spare bulbs and fuses, 2 pieces each</td>
<td></td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Immersion oil and vinyl dust cover</td>
<td></td>
<td>•</td>
<td>•</td>
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</tr>
</tbody>
</table>
The products Olympus presents to the world have become an indispensable contribution to many scientific disciplines as well as a popular part of everyday life:

Cameras in which the amateur and the professional can find truly satisfying photography.

Microscopes and measuring instruments that are contributing to the advancement of industry and science.

Tape recorders and facsimile units which are helping to set the pace of the rapid growth of communications.

Electronics are now playing a big role in developments at Olympus and have been applied to many revolutionary products.

The automatic chemical analyzer, developed by Olympus, is one of these.

It automatically analyzes and records sugar, urea, protein, nitrogen, cholesterol, bilirubin, albumin and thymol turbidity contents of specimens simultaneously and is finding wide application in the medical field.

Another break-through is the fibroscope which can visualize an internal view of endoscopic objects and even take photographs.

The past year has been studded with similar developments in all fields related to the transmission and utilization of light, and the brains at Olympus are now also penetrating the great potential of laser technology.

For the student analyzing his first specimen; for the businessman counting on faster production of micro-parts; for the use scientist with his eye on the future...in fact, for everybody wishing to look into the world beyond man's vision, Olympus has something to offer.