

DESCRIPTION

To obtain high-contrast images of unstained and transparent samples, a phase contrast method is used, which requires special lenses with phase rings and a module with phase diaphragms for the condenser.

ACUCAL Phase Contrast implementation kit and high-efficiency bright transmitted light source provide clear images throughout the entire magnification range.



Using an inverted microscope, the sample is illuminated from above and viewed from below through the bottom of the sample vessel. With such an inverted design, the device enables the microscopy of plankton, microalgae and cell cultures directly in the culture vessel without opening the vessel. For example, cell cultures can be observed in so-called 96-well (Terasaki) plates, Petri dishes or special slides with attached wells. The sample does not have to be covered, and the thickness of the layer is also insignificant.



Snail neuron

Application Range: Living cells in culture, Microorganism , Tissue slide , Subcellular grains (including cell nuclei and organelles).

TECHNICAL SPECIFICATION

Main Body

- Sturdy, durable Inverted metal body main frame, Compact, stable and suitable for clean bench, Highly rigid & rugged, Non Hinged type, vibration free Aluminium alloy casting, Robust mechanics combined with improved optical performance. Ergonomic design for comfortable handling, ruggedness and longevity.
- Touchpoint-treated, scratch resistant and acid & UV resistant texture paint.
- Spherical lens with field diaphragm & intensity controller and an on/off switch (in front) and rubber feet for stability.
- Design supports all kinds of dishes, Flasks, Petri plates & Multi wells.

Optical System

- LWD Universal Plan Infinity corrected Phase Contrast Optical System providing chromatic-free and colour-corrected images.
- Infinity Phase Contrast, Epi- Fluorescence & Bright Field observation.
- Anti Fungus & Anti-Bacterial coated optics for enhanced durability (multi-layered hard coated).
- **Microscope Upgradable to dark field, phase contrast, Emboss contrast/DIC/IMC (pseudo 3-D), Hoffman observation technology, on-stage top incubator for live cell imaging.**

Observation Head: Trinocular

- Sidentopf Trinocular Observation tube 45° inclined, built in Bertrand lens .
- Straight Camera Port & C/CS-Mount Adapter with Light distribution: 100: 0 or 0:100 (100% for eyepiece or 100% for camera).
- Beam split: 100% T / 0% B / 20%T / 80% B.
- Inter-pupillary distance from 47mm to 78mm.

Eyepiece

- Compensating Wide field 10X (paired) F.O.V. 20/22/23/25mm. Bright Field Br, Focusable Foc., Field of view number F.N. 20/22/23/25mm, Eyepiece outer mounting barrel diameter or Inner diameter of ocular sleeve 30mm. Oculars can be rotated by 360°.
- Anti-fungal & Anti-reflection multi-layered hard coated conforming to IS: 8275/1976 (latest) for enhanced image quality and abrasion resistance
- Diopter adjustment facility (+5) on both eyepiece.
- High Quality & Anti mould eyepieces to get the Image of object well defined over the entire field with good contrast rendition and practically free from spurious color effects.

Nose Piece

- Sextuple, Ball Bearing loaded, interchangeable, Precise, Positive click stops for centred alignment.
- Inbuilt DIC/Plastic DIC slot and relief contrast/equivalent contrast for improved imaging
- Nosepiece provided with rubber grip for easy rotation mounted on a precision ball bearing mechanism for smooth and accurate alignment.
- **ILIM.A:** Coded Nosepiece for Light Intensity Management Option for Illumination Intensity auto adjustment with change of Objective (**Optional**)

Objectives: Long Working Distance N-Plan Infinity Achromatic or Semi Plan Apochromatic or Apochromatic , High Resolution & High Contrast, Anti-fungal & Anti-reflection, Uniformly Centred, Interchangeable & Parfocal.

- Infinity Plan Phase Contrast objective 10X (N.A. 0.30), W.D. 7.4mm
- Infinity Plan Phase Contrast objective 20X (N.A. 0.45), W.D. 7.5 to 8.8mm
- Infinity Plan Phase Contrast objective 40X (N.A. 0.65), W.D. 3 to 4.4mm

- Objectives have Suitable prominent marking for easy identification : Color coded ring, magnification, NA and nature of objective mentioned, Unbreakable containers for storing the objectives.

Condenser

- Multifunction condenser with 6/7 holes: Multifunction condenser with 6 positions: BF / PH (Ph1, Ph2, Ph3) / DF / DIC / Emboss contrast
- Working Distance 26mm to 40mm (with condenser),
- Numerical Aperture 0.55. Suitable for Bright field, phase contrast and integrated modulation/Plas DIC/hoffman modulation contrast. Universal 4-position Phase Contrast Slider Annular Plate : 4x (BF), 10x (PH0)/ 20x (PH1)/ 40x (PH2).
- Pre –centered Phase contrast slider for phase observation for the objectives from 10-40X for faster cell culture operations

Mechanical Stage:

- Three Layer Scratch resistant with hard coat anodized surface, Rectangular Mechanical Stage with right-hand low drive control, Size 250*170mm, XY Moving Range 130*85mm, Moving Stage Detachable - Smooth, drift-free movement.
- Stage accepts different types of micro-test plate, TC vessels lifting type micro plate holder, emocytometer, counting chamber, petri dish holder, glass slide holder & culture flask holder, clear acrylic/glass circular insert, various stage inserts, holder for two side stages, micro-manipulator etc.
- Culture Petri Dish Holder/ Slide Holder Dia.54mm
- Culture Petri Dish Holder/ Slide Holder Dia.60mm (Optional)
- Culture Petri Dish Holder Dia.90mm (Optional)
- Universal Holder to accept all types of plates, multi well plates, petri dishes, 6/12/24/38/96 mm well plates, petri plate holder, glass slides, Hemocytometer, specimen holders slides, Tissue Culture flasks and counting chamber, culture dishes (35–65 mm), and multi-well plates (Terasaki). (Optional)

Focusing Control:

- Coaxial Coarse & Fine knob Precise adjustment & for focusing system by the vertical movement of revolving nosepiece and fixed stage.
- Tension Adjustable and Limit Stopper, Minimum fine Division 0.001mm, Ergonomically designed for easy grip.
- Moving Range 9mm (up 2mm, down 7mm), Coarse Stroke 2mm per Rotation, Fine Stroke 0.2mm per Rotation

Diascopic Illumination: Koehler Transmitted Fly-Eye Lens Design Illumination with constant color temperature, 3W/5W/10W Scientific Grade LED cool white light for bright field or 12V/100W Halogen bulb), phase contrast studies, Brightness Adjustable with lifetime < 65,000 hours (with 40 working hrs/week).

Switchable Intermediate Ratio : With a smooth turntable operation, the intermediate magnification can achieve 1x, 1.5x fast switching.

Electronics: SMPS Based power supply with Universal Input Rated Voltage 90V-250 V AC, 50/60 Hz.

Standard Accessories : Operating & Instruction Manual, Vinyl Dust Cover, Guarantee Card, Styrofoam Molded pack, Electric Cable, Fuse, Blue Filter , Cleaning cloth, Allen keys.

Optional Accessories : High Resolution Microscopy Camera.

I7FL.A: Epi Fluorescence Attachment : Epi-Fluorescence Attachment, Turret slider 6 position (5+1), 5 Holes to configure 5 different fluorescent Filter Cubes & 1 separate for brightfield, With Noise Terminator Mechanism & With Attachable UV contrast Shield

- 100W HBO fluorescence lamp house, life hrs. 30,000, built in flyeye (input voltage:100V~240V)
- DAPI/Hoechst, GFP/FITC (Band Pass), and TRITC/Rhodamine fluorescence filters

Transmission

Switching between transmitted and reflected lighting

The modular design of ACUBL-I7 microscopes allows them to be equipped with a fluorescent light source - a bright LED or a mercury lamp.

The epifluorescent mercury lamp has a wide range of wavelengths, providing effective excitation in all spectral ranges of dyes.

You can easily switch between transmitted (TR) and reflected (RL) light modes by pressing the corresponding button on the base of the microscope.

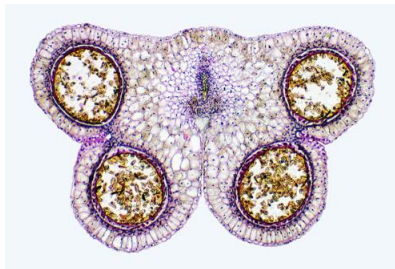


Bright Field

The unique optical system of ACUBL-I7 series microscopes, combined with semi-apochromatic objectives, effectively eliminates image distortions such as chromatic and spherical aberrations, coma, field curvature, etc. Vivid, high-resolution images are available at all magnifications.



Liverwort leaf section



Lily anther



Live Chilodonella sp. Consume algae Pinnularia sp.

Optional

I7DIC.A: Differential Interference Contrast (DIC) `

DIC is a high-quality method for examining unstained, transparent samples in transmitted light. For thin samples such as induced pluripotent stem cells, DIC provides high-contrast, pseudo-3D imaging without a diffraction halo.



DIC Microscopy Kit



Conjugation of freshwater ciliates

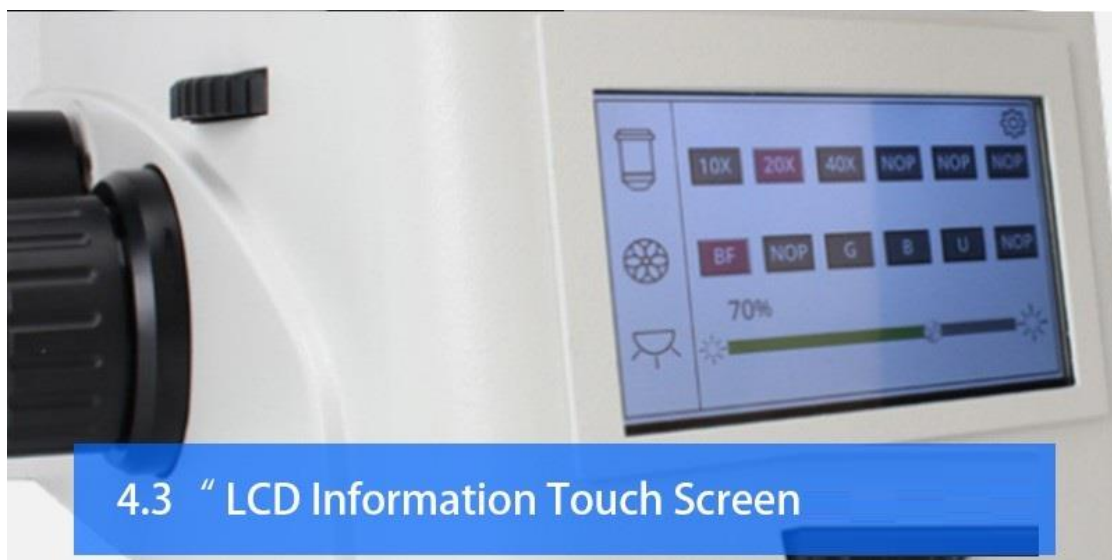
I7LIM.A: Touch Screen LED Information

Optional

In Front of Main Body, For Easy Watch & Control in The Dark Working Condition.

LIM Option for Illumination Intensity auto adjustment with change of Objective

- Coded Nosepiece
- Show Objectives in use in Nosepiece
- Show Cubes in Use in Multi Function Turret
- Brightness Memorize & Restore Function
- Touch to Adjust Brightness
- Touch to Set the System



Automatic Brightness Switching

When the operator changes objectives, the intelligent controller switches the brightness to the last used setting.

INTELLIGENT OPERATING SYSTEM :

CODED NOSEPIECE

It can memorize the illumination brightness for each objective and automatically adjust the light intensity. This improves work efficiency and reduces visual fatigue.

The Liquid Crystal Display (LCD)

The LCD shows the usage status of the microscope, including magnification, light intensity, sleep mode and more.

Features

- **Various Holders for Different Culture Containers:** Various holders are available for different culture containers, such as Petri dishes, well plates, and culture flasks. As well as available for different size Petri dishes.
- **Changing Magnifications :** To change the magnification factor in accordance with the objectives of the study, the ACUCAL microscope stand has a switch that selects the magnification value of the tube lens between 1X and 1.5X.



- **The Microscope Control Mechanism is Reasonable in Layout and Easy to Operate :** The frequently used control mechanisms are close to the user and in low-hand position. This kind of design makes operation more quickly and conveniently, and reduce the fatigue caused by the long observation. On the other hand, it reduces the airflow and dust caused by large amplitude operation, and it is very effective to reduce the probability of sample pollution. It is a strong guarantee for the accuracy and repeatability of the experimental results.
- **Folding condenser :** With one click, the column with the condenser tilts back. This creates more free space for conveniently changing samples in the culture dish.



- **Fly-Eye Lens Design illumination** i.e. 2D array of tiny lenses to spatially transform light from a non uniform to uniform irradiance distribution at an illumination plane over entire FOV.