Inverted Advance Research Fluorescent Microscope

Type: ACUBL-I7 FL

DESCRIPTION

ACUCAL inverted fluorescent microscope uses fluorescence to study specimens, such as living cells at the bottom of a petri dish or tissue culture. The Inverted Fluorescent Microscope has similar components to those of other microscopes, and the only difference is the arrangement of the parts, which are placed in inverted positions.
The specimen is lit using a halogen lamp or LED as a light source. When light enters the microscope, it strikes a dichroic mirror, reflecting one range of wavelengths while allowing another to pass through. The ultraviolet light is reflected up to the specimen by the dichroic mirror. The UV light causes fluorescence in the specimen's molecules and the fluorescent-wavelength light generated is collected by the objective lens.

The ACUCAL ACUBL-I7 FL is particularly suitable for observing cell cultures and is very user-friendly and easy to handle. The UV-resistant coating ensures that the workstation can be sterilised with UV light without any problems.

ACUBL-I7 FL is equipped with excellent Universal Infinity System (UIS) optical system, long working distance objectives and very long working distance condenser. Compact & steady main frame body is embodiment for shock resistance. The ideal ergonomics design is adopted in this unit and have easier operation & wide space. It can observe transparent and unfinished living specimen in culture bottle or culture utensil. It is used to identify Phytophthora spp, nematology extraction specimens such as vermiform, and to see Mycobacterium tuberculosis. It can be used in scientific research institutes, universities, medical treatment, agriculture and epidemic prevention, etc.

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.

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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, Live cell imaging, Emboss contrast/DIC/IMC (pseudo 3-D), Hoffman observation technology, on-stage top incubator for live cell imaging, ICSI (manipulator system) Sperm selection etc.***

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Observation Head: Trinocular

- Sidentopf Binocular Observation tube 45° inclined, built in Bertrand lens.
- Dual Camera Port: An optical path output selection turnplate is located on the left side of the microscope to facilitate the distribution of optical images to different ports, providing additional room for more optical image applications.
- Light distribution Left Port/Right Port/Eyepieces;
  Splitting Ratio: Left/Eyepiece=100/0, Right/Eyepiece=80/20 or 0/100
- Inter-pupillary distance from 47mm to 78mm.

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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°. Diopter adjustment facility (+5) on both eyepiece.
- Anti-fungal & Anti-reflection multi-layered hard coated conforming to IS: 8275/1976 (latest)
  for enhanced image quality and abrasion resistance
- 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.

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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.
- ***I7LIM.A:*** Coded Nosepiece for Light Intensity Management Option for Illumination Intensity auto adjustment with change of Objective (Optional)

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Objectives: Long Working Distance Infinity Plan, Anti-fungus, Interchangeable & Par focal

- Infinity Plan Semi-Apochromatic Phase Contrast FL objective 10X (N.A. 0.30), W.D. 7.9mm
- Infinity Plan Semi-Apochromatic Phase Contrast FL objective 20X (N.A. 0.45), W.D. 8mm
- Infinity Plan Semi-Apochromatic Phase Contrast FL objective 40X (N.A. 0.65), W.D. 3.7mm

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

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Condenser

- Multifunction condenser with 6/7 positions: BF / PH (Ph1, Ph2, Ph3) / DF / DIC / Emboss contrast.
- Working Distance 27-30mm (with condenser) ,75 mm (without condenser)
- Numerical Aperture 0.29/0.55.Suitable for Bright field, phase contrast and integrated modulation/Plas DIC/hoffman modulation contrast. Universal 4-position Phase Contrast Slider Annular Plate : 4x (BF), 10× (PH0)/ 20× (PH1)/ 40× (PH2).
- Pre –centered Phase contrast slider for phase observation. for the objectives from 10-40X for faster cell culture operations & adjustable field iris Diaphragm.

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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, specimen holders slides, Culture flasks and counting chamber, culture dishes (35–65 mm), and multi-well plates (Terasaki). (Optional)

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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

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Diascopic Illumination: Koehler Transmitted Fly-Eye Lens Design Illumination with constant color temperature, 5W/10W/25W Scientific Grade LED cool white light or 12V/100W Halogen bulb) for bright field, phase contrast studies, Brightness Adjustable with lifetime ≥ 65,000 hours (with 40 working hrs/week).

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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
- Light source - 100W HBO fluorescence lamp house OR 04 color Solid-State LED light source (wavelength 385, 470, 525nm/625nm) with excitation UV, Blue, green & red or white LED which covers spectral range from UV to Far Red suitable to observe samples with DAPI, Alexa 405,Hoechst 33258, eGFP, Fluo4, FITC, Cy3, TRITC, DsRed, Cy5, Alexa 631, TOTO-3 and similar standard dyes.
- Life hrs. 30,000, built in flyeye (input voltage:100V～240V)
- Zero Pixel shift corrected DAPI/Hoechst, GFP/FITC (Band Pass), and TRITC/Rhodamine fluorescence filters can be chosen
- Aperture diaphragm slider, Field diaphragm slider, Color temperature plate

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, Infinity Plan Achromatic Phase Contrast FL objective 4X,10X,20X,40X,60X,100X

Transmission

I7FL.A: Fluorescence

Switching between transmitted and reflected lighting

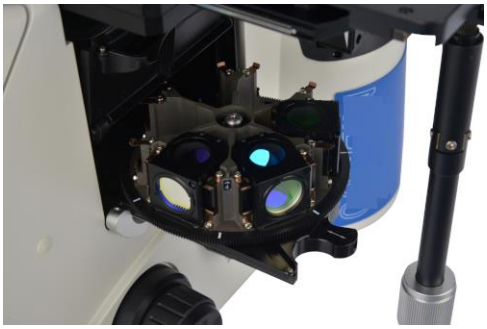
The modular design of **ACUBL-I7** microscopes allows them to be equipped with a fluorescent light source - a bright LED or a mercury lamp.

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.

Fluorescent filter turret : The six-position fluorescence filter turret provides convenient operation in multiple fluorescence channels. For easy and quick filter changes, the turret can be completely removed from the microscope base.

Fluorescent filters : High-quality coating of fluorescence filters dampens excess light and spontaneous fluorescence, providing excellent contrast and high signal-to-noise ratio.



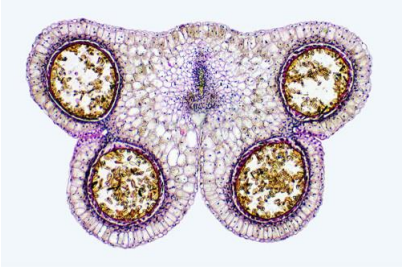
Simple and fast setup for research

The intensity of the fluorescence source is adjusted using slide diaphragms to the optimum value for the specific purposes of each study. An aperture diaphragm, a field diaphragm and neutral filters can be placed on the optical path of the epifluorescence source. Thus, the **ACUBL-I7** microscopes become universal in cell research and, at the same time, unique for each individual study.

Bright Field

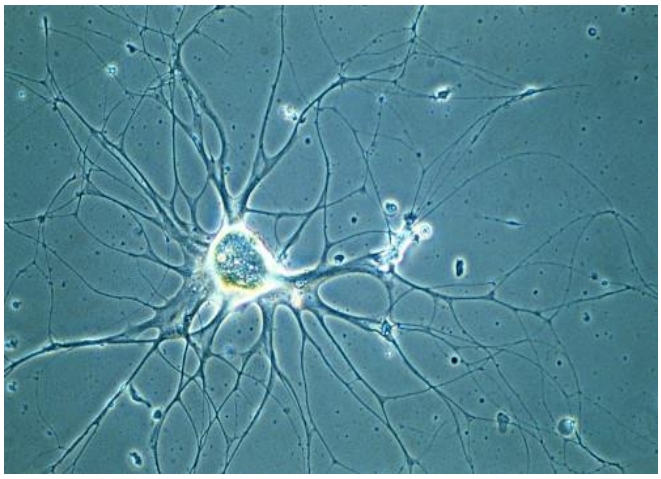
The unique optical system of ACUBL-I7 series microscopes , combined with semi-apochromatic objectives, effectively eliminates image distortions such as chromatic and spherical aberrations, coma, field curvature, etc. Vivid, high-resolution images are available at all magnifications.

Liverwort leaf section



Lily anther

Live Chilodonella sp. Consume algae Pinnularia sp.



Snail neuron

Phase Contrast

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.

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

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.