

**New redesigned**

## **UCM: The Universal Comparison Macroscope for Forensic Investigations**



- **New** Illumination / Fibre Optics System
- **New** Design, improved ergonomics for height adjustment operation
- **New** Digital Camera System with PIA-4000 Forensic Software
- **New** +/- Object size adjustment with PIA-4000
- **New** Working bench with motorized height adjustment

## The PROJECTINA UCM –

Outstanding optical performance combined with excellent ergonomics



Working bench with motorized height adjustment

Innovations in optical comparison systems have a long tradition in Projectina. We have developed and manufactured optical comparison systems for industrial and forensic science applications for over 30 years.

The new UCM is a modular system for any side-by-side comparison application, e.g. in Ballistics for comparison of traces on fired ammunition, for tool marks examination and for document comparison. The ability to see, inspect and correct images directly on the monitor and to print them immediately, provides user benefits in terms of economics and versatility.

The UCM impresses by its ease of operation, compact and solid design, ergonomic and user-friendly position of controls.

Only Projectina precision optical components are incorporated in the UCM, offering a **unique magnification range from 1x to 90x**, with the following operation modes:

- **full image left, full image right**
- **split image with adjustable dividing line**
- **superimposed image comparison**
- **complementary colours**

### The core benefits of the Projectina UCM are:

- simplicity in use, no need of basic adjustments and therefore rapid set-up and review of examined cases
- 1:1 magnification provides original replication of objects with constant long working distance of 215 mm
- high quality optical system with magnification range up to 90x and large field of view of 135 mm
- 100% correct, stationary built-in objectives, without magnification alignment
- motorized height adjustment up to 190 mm
- new design of object holders for bullets, airgun ammunition, cartridges, deformed bullets, wires, tools, documents, printed matters, casting material, holder for airgun bullets, etc.
- new fibre optics illumination with holders and illumination ring for exact object positioning

The UCM is the ideal instrument for solving challenging forensic comparison cases today and in the future.



Full image left or right



Split image comparison



Split image with moveable dividing line

## Modular, Versatile and Expandable System

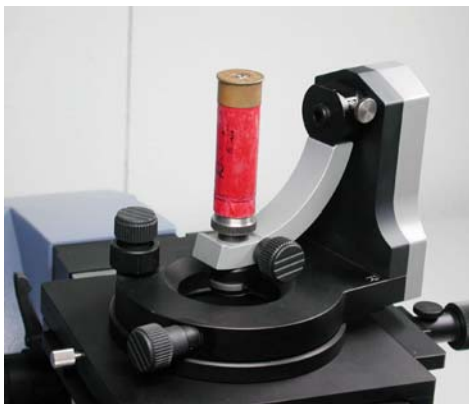
The UCM convinces by its excellent stability, ergonomic design and an ingenious object holder system for a wide variety of objects, such as bullets, cartridge cases, projectiles, tools, pump gun- and hunting gun ammunition, lock cylinders, deformed bullets, tool marks in Microsil, etc. The new object holder includes self-fixing clamps and brushes with various diameters for all kinds of bullets and cartridge cases.



object holder with new air gun holder



cartridge holder rotatable more than 90°



holder for pump gun cartridges



bullet holder



holder with plasticine  
for Ø 5, 10, 15 and 20 mm



universal holder with  
3-point fixing clamp



holder with plasticine



holder with casting material (rear  
side of plasticine holder)

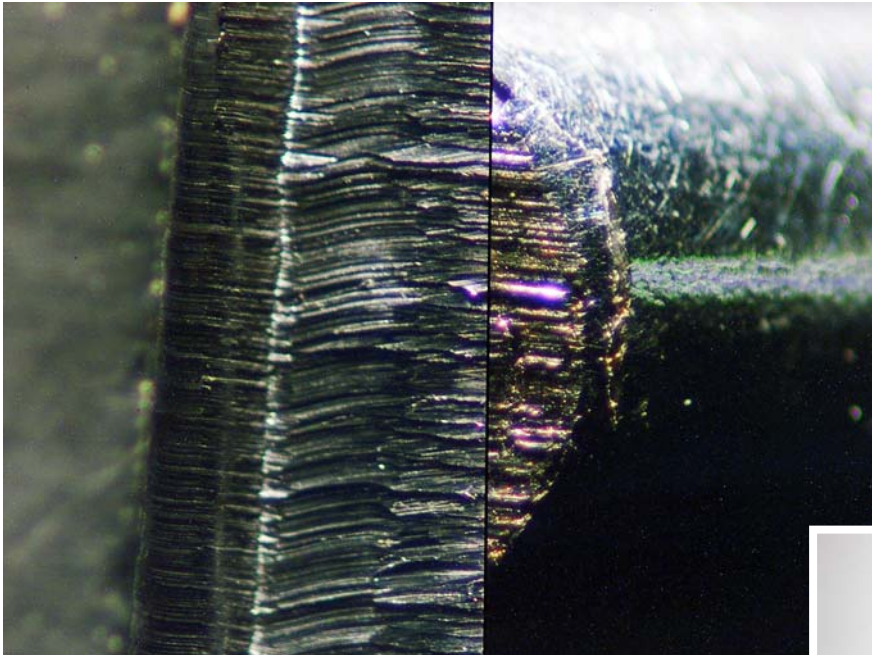


grip holder

## New Fibre Optics Illumination

The clear presentation of fine structures and minute traces, without any disturbing reflections requires a sophisticated illumination concept. The multiple tasks due to variety of objects, their shapes and sizes, their surfaces and structures, can only be met by a flexible and comprehensive choice of illumination systems.

8 modular light sources allow examination in inclined and coaxial surface light, transmitted light as well as UV light, 365 nm, in surface and transmitted light (particularly used in document examination). For special object comparisons, fibre optics light sources are very useful. Thanks to a modular design, light sources and accessories can be retrofitted at any time. Special accessories, like surface light mirrors, diffusers or polarisation sets complete the unique range of illuminations.



Split image comparison: bolt cutter / padlock



flexible light guide with holder



shape converter 30 mm



UV illumination



vertical mirror system

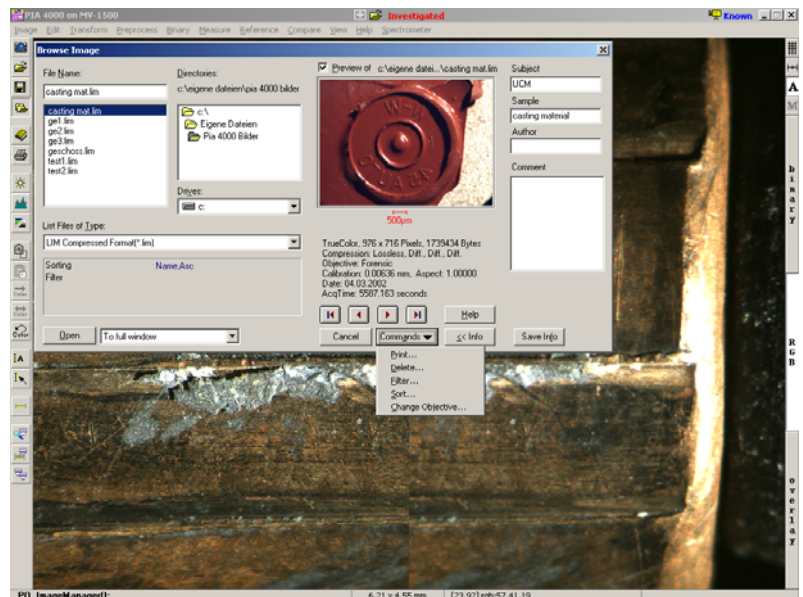


diffuser for shadow-free illumination

# Documentation, Measuring and Archiving with the sophisticated PIA-4000 Software

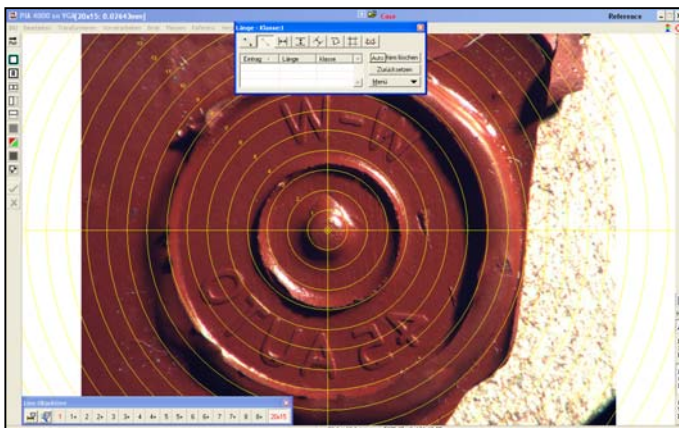
Projectina provides a wide range of adapters for 35 mm SLR cameras, digital cameras, video cameras, etc. meeting all requirements in documentation, team discussion and training.

With the Projectina digital camera in combination with the high sophisticated PIA-4000 Software, the UCM becomes even more efficient. The network compatible PIA-4000 is the perfect complement for real-time comparisons, measuring, image analysis, image enhancement, documentation, archiving of comparison samples, creation of reports, etc.

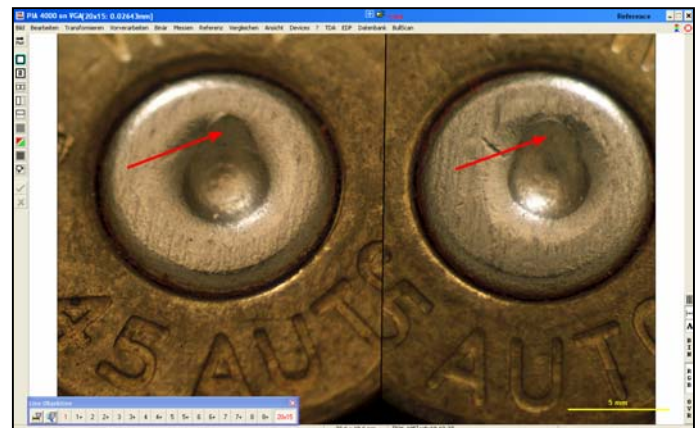


Some important features are:

- measuring functions: length, parallel, circles, areas, angles, rectangular, ellipses, etc.
- fade-in of reference scale, concentric circles and grid
- mirror function, horizontal and vertical
- step less rotation 0° - 360°
- side-by-side comparison of live and stored images, horizontal and vertical split, adjustable dividing line
- superposition of live and stored images
- Superposition in transparency positive/negative
- complementary colours (red/green)
- chopper function (alternating image display)
- binary functions
- magnify window function
- brightness control, contrast enhancement and chroma adjustment
- negative image display
- noise reduction
- database (album)
- AVI function for recording and playing of video sequences, specially for kinegrams and holograms



fade-in of concentric circles



fade-in of arrows and text

## Technical Data

### Basic system:

- Compact and ergonomic basic system in modern design, with carrying handles, system fully assembled (only adaptation of accessories required)
- motorized Z drive for height adjustment of 80 mm
- travel of coarse/fine drive for individual height adjustment: 50 mm
- mechanical drive of left and right object holder: 60 mm
- optical unit for superimposed and split-image comparison, adjustable functions: full image left; full image right; split-image vertical with laterally adjustable dividing line; superimposed image comparison
- optical module for simultaneous binocular and video/photo observation
- inclined binocular tube including eyepieces 10x/20 for spectacle wearers
- integrated tool tray
- distance between optical axis 460 mm
- magnification range 1x - 90x, field of view 150 mm - 1.67 mm, minimal working distance 100 mm
- cold light illumination 150W with fibre optics light guide d = 10 mm, length 1200 mm and flexible holder

objective	intermediate magnification	eyepiece 10x/20		working distance
		M-tot	field of view Ø	
1x	1x	1x	150,00 mm	215 mm
	1,75x	1,75x	78,00 mm	
	3x	3x	45,00 mm	
6x*	1x	6x	22,50 mm	120 mm
	1,75x	10x	13,50 mm	
	3x	18x	7,50 mm	
30x*	1x	30x	4,50 mm	100 mm
	1,75x	52x	2,55 mm	
	3x	90x	1,67 mm	

\*with Iris diaphragm

### Working stages:

- Mechanical range for X/Y movement of 60 mm, with coarse/fine drive and fixing clamps in X and Y, object surface 149x149 mm, with glass insert

### Accessories for investigation of firearms:

- Cartridge holder set complete with:
  - bullet holder, adjustable, with self fixing clamp
  - 5 set of supports for cartridge cases, Ø 5.6, 8, 11, 15 and 25 mm
- Universal support with three-point fixing clamp
- Support with plasticine for deformed bullets
- Grip holder
- Diffuser round, for shadow-free illumination

**Accessories for tool marks:**

- rotating/tilting stage for tool marks, to be locked in all positions, with raster in horizontal position, object surface  $d = 120$  mm, tiltable  $30^\circ$ , including grooves for plasticine
- tool support to adapt universal holders

**Accessories for document examination:**

- object stage, left,  $280 \times 280$  mm, adjustable  $\pm 5^\circ$ , including paper weights
- object stage, right,  $280 \times 280$  mm, including paper weights
- transmitted light illumination set, 12V/50W, brightness control
- red/green filter for complementary colour effect

**Additional illumination accessories:**

- vertical mirror unit for smooth and strongly reflecting object surfaces
- illumination ring for fibre optics light guide, rotation  $\pm 180^\circ$
- shape converter, line 30 mm, light exit 2 mm, for side light
- UV illumination 365 nm, including transformer 9W, for document examination
- polarisation filter set

**Software for comparison investigations and data transfer:**

- PIA-4000 Image processing, comparison and measuring software with image album functions for Windows 2000 or XP Pro

**Camera systems:**

- High resolution digital colour camera, picture elements 1,4 M pixel, camera integration up to 12 images per second
- Further camera systems on demand.

**Adapter for video, photo or digital camera connection**

- a wide variety of adapters according to your individual needs

**Dimensions:** basic system: 750x460x590 mm (wxdxh)

**Weight:** basic system: 55 kg

**Power supply:** 230V/50Hz / 110V/60Hz

**Training programs / customer support**

Projectina organizes professional training courses together with forensic science experts in our training centre in Heerbrugg/Switzerland or at your premises.

**Projectina offers consultation, installation, training and maintenance worldwide, at customer's site. Maintenance contracts are available for all products.**



Demonstration and training centre in Heerbrugg/Switzerland.



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