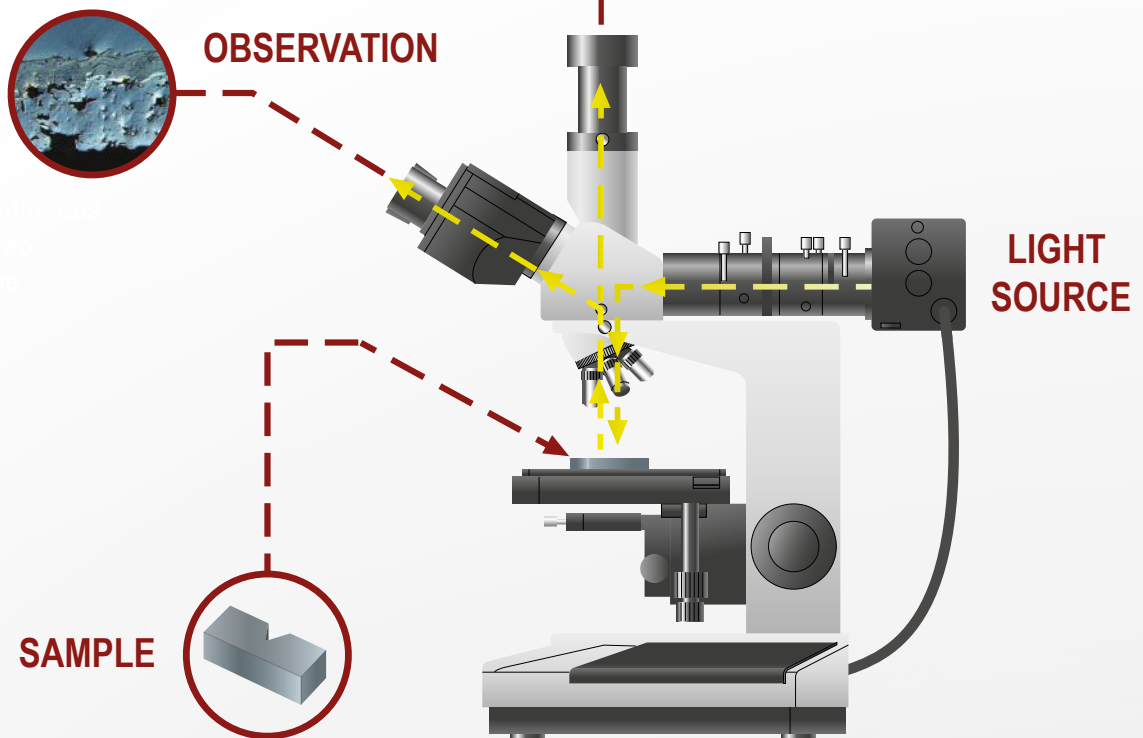


## Upright microscopes

- > Reflected light microscopy is the choice for imaging opaque samples. The sample is illuminated from above through the objective. Because light is unable to pass through opaque samples, it is directed on the surface and returned to the objective by reflection.
- > Most common samples are : metals, plastic materials, wood, silicon, ceramics etc.

IMAGING



- > Upright reflected light microscope has two eyepieces, normally 10x magnification, and, in most cases, a tube head dedicated for using a camera system, this connection is normally on the viewing tube.
- > The nosepiece is capable of holding from four to six objectives, these can be recognized by the Epi tag on their external cover.
- > Mechanical stage sample holder can be moved in the XY axis, while the entire stage can be moved up and down through coarse and fine focusing mechanism. In certain configurations these movements can be automated by using motorized stage systems.

- > The illumination system is built-in with dedicate lamp housing, the generated light passes through a vertical illuminator between the nosepiece and below the viewing tube head.
- > The sample is placed upside down on the stage with the surface to be observed facing the objective.
- > Several techniques are commonly used: Brightfield, Darkfield, Polarized light and Differential Interference Contrast (DIC).



UM 800

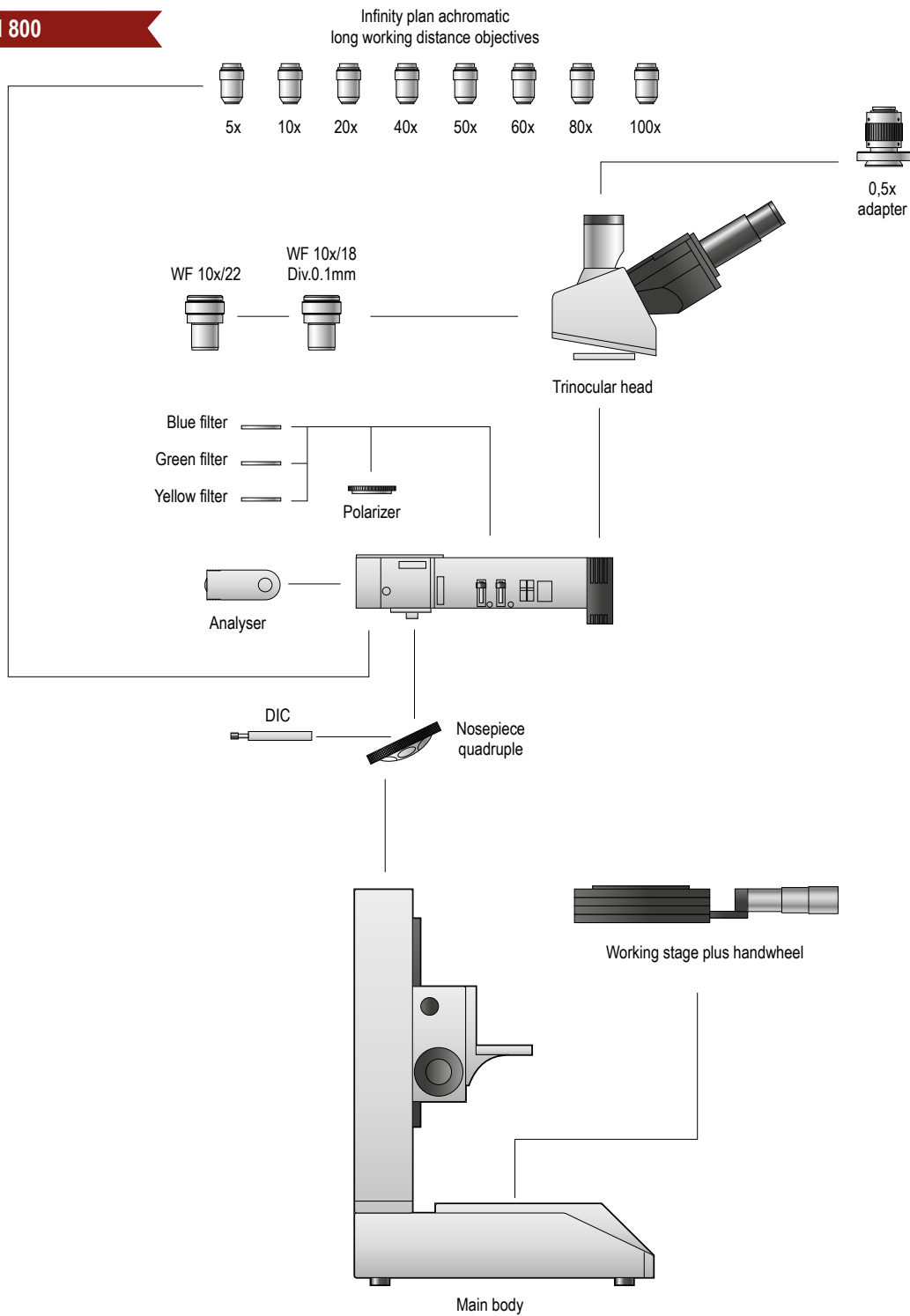


Model	UM 800
Optical system	CCIS
Total magnification	50x - 100x - 200x - 400x
Eyepiece	WF 10x (ø22mm)
Plan achromatic objectives long working distance	PL L 5x/0.12 WD=26.10mm
	PL L 10x/0.25 WD=20.20mm
	PL L 20x/0.40 WD=8.80mm
Head	PL L 40x/0.70 WD=3.68mm
	Trinocular
	Inclination of 30°
	Interpupillary distance 55mm-75mm
Nosepiece	Diopter adjustable ±5
	Quadruple back ball bearing inner locating
Stage	Mechanical stage overall size 160x160mm
	Glass working stage 360° rotatable, scale 1°
	Coaxial motion 50x50mm
Handwheel	Separating capability: 0.001 (digital display)
	XY digital resolution: 0.001mm
	Handwheel scale: 0.01mm
Focusing System	Coaxial coarse/fine focus system, minimum division of fine focusing 1µm
	Tensional adjustable with upper stop
Reflected illumination	5W LED lamp, brightness control
Transmitted illumination	5W LED lamp, brightness control
Polarization	Internal polarizer
Analyzer	360° rotatable analyzer
Filter	Blue for reflected light
	Green for reflected light
	Yellow for reflected light
Contrast techniques	Brightfield: Yes
	Darkfield: Not available
	DIC: Not available
	POL Contrast: Yes
Power supply	230V ±10% - 50/60Hz -1Ph - 30W
Dimensions	500x480x490mm
Weight	27kg

Optional accessories	
Model	Description
UM E-800-01	Eyepiece 10x (ø18mm) crosshair 0.1mm/Div.
UM O-800-21	Long working distance objective PL L 50x/0.70 WD=3.68mm
UM O-800-22	Long working distance objective PL L 80x/0.80 WD=1.25mm
UM O-800-23	Long working distance objective PL L 100x/0.85 WD=0.40mm
UM Dk-800-81	DIC kits
UM CA-800-91	Camera adapter 0.5x

COMPONENTS DIAGRAM

UM 800



UM 620 BD

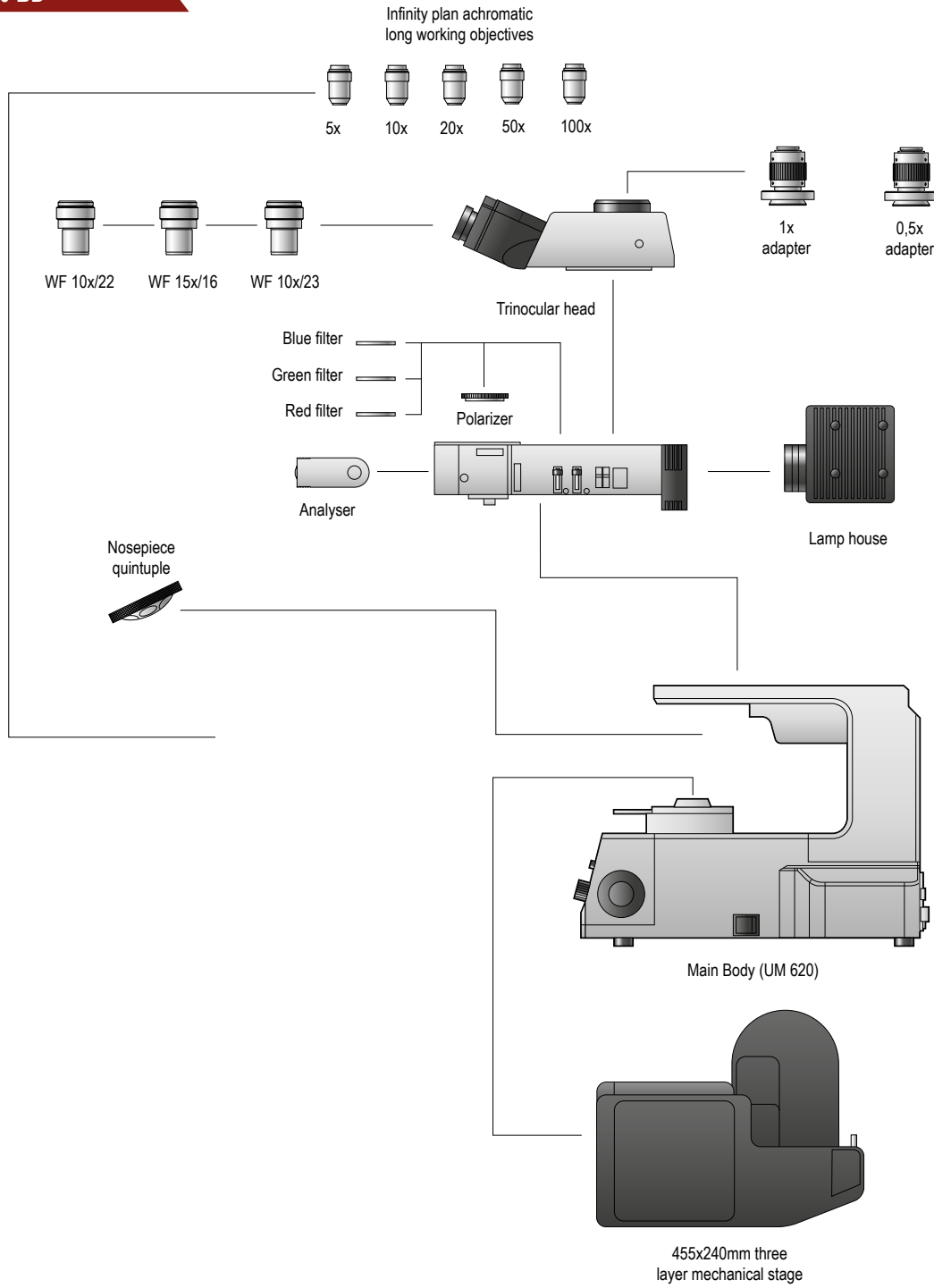


Model	UM 620 BD
Optical system	CCIS
Total magnification	50x - 100x - 200x - 500x
Eyepiece	WF 10x (ø22mm)
Plan achromatic objectives long working distance	PL L 5x/0.15BD WD=11mm (for DIC observation)
	PL L 10x/0.30BD WD=9.50mm (for DIC observation)
	PL L 20x/0.45BD WD=3.40mm (for DIC observation)
	PL L 50x/0.55BD WD=7.50mm
Head	Trinocular
	Inclination of 25°
	Interpupillary distance 55mm-75mm
	Diopter adjustable ±5
Nosepiece	Quintuple back ball bearing inner locating
Stage	Mechanical stage overall size 455x240mm, glass insert size 100x100mm
	Coaxial motion 158x158mm
Focusing System	Coaxial coarse/fine focus system, minimum division of fine focusing 1µm
	Tensional adjustable with upper stop
Reflected illumination	Illumination with integrated field diaphragm and aperture diaphragm
	5W LED lamp, brightness control
Transmitted illumination	Condenser N.A. 0.5
	Illumination with integrated Iris field diaphragm and aperture
	5W LED lamp, brightness control
Polarization	Internal polarizer
Analyzer	360° rotatable analyzer
Contrast techniques	Brightfield: Yes
	Darkfield: Yes
	DIC: Not available
	POL Contrast: Yes
Power supply	230V ±10% - 50/60Hz -1Ph - 30W
Dimensions	523x465x471mm
Weight	23kg

Optional accessories	
Model	Description
UM E-600-01	Eyepiece H WF 15x (ø16mm)
UM E-600-02	Eyepiece H WF 10x (ø23mm)
UM O-600-21	Long working distance objective PL L 100x/0.80BD WD=2.10mm
UM F-600-61	Green filter for reflected light
UM F-600-62	Red filter for reflected light
UM F-600-63	Blue filter for reflected light
UM F-600-64	White balance filter for reflected light
UM CA-600-91	Camera adapter 0.5x
UM CA-600-92	Camera adapter 1x

COMPONENTS DIAGRAM

UM 620 BD



UM 410I DIC



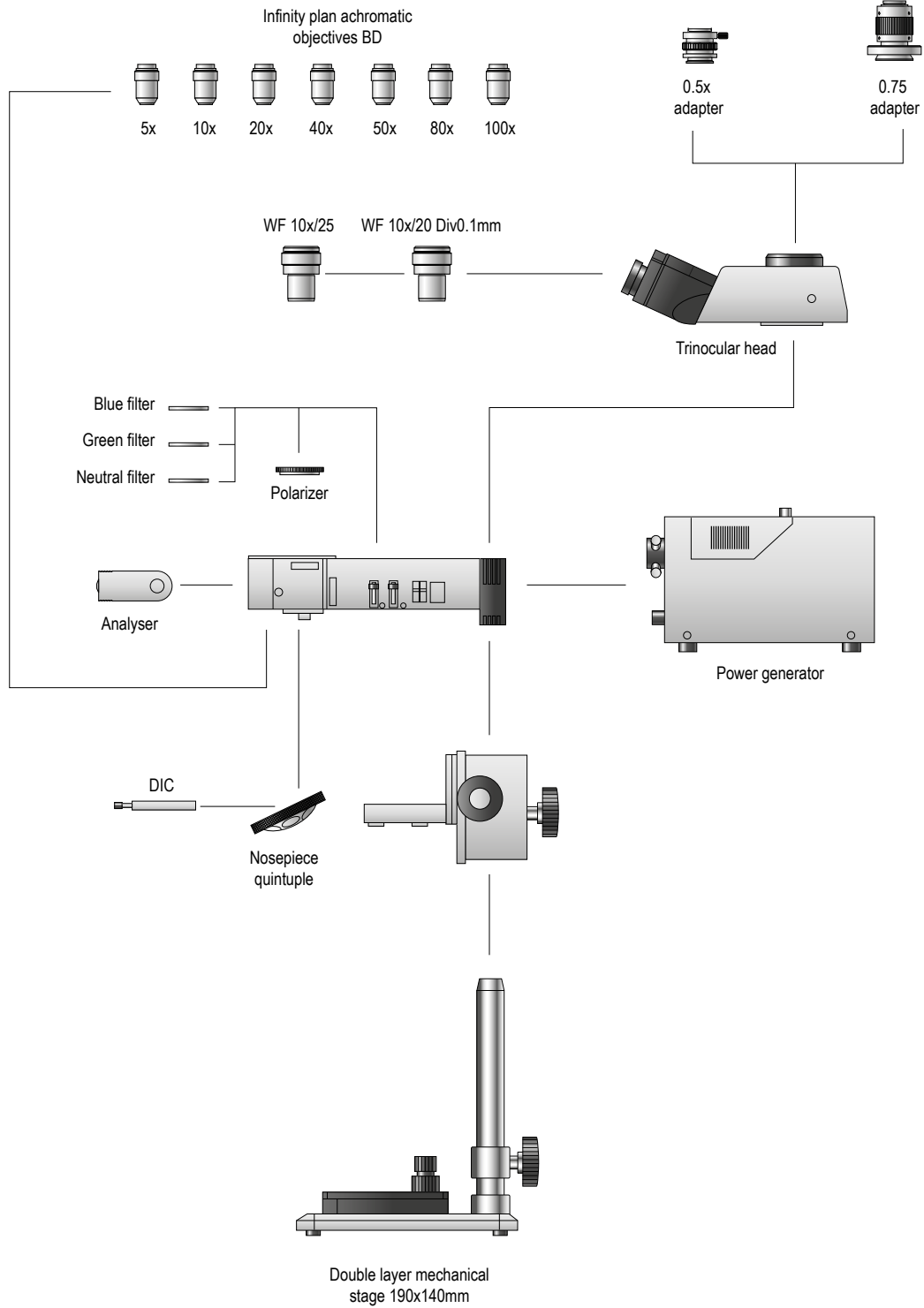
Model	UM 400I DIC
Optical system	CCIS
Total magnification	50x - 100x - 200x - 400x
Eyepiece	WF 10x (ø25mm)
	WF 10x (ø20mm) with crosshair 0.1mm/Div
Plan achromatic objectives long working distance	PL L 5x/0.12BD WD=29.40mm
	PL L 10x/0.25BD WD=16.00mm (for DIC observation)
	PL L 20x/0.40BD WD=10.60mm (for DIC observation)
	PL L 40x/0.60BD (Spring) WD=5.40mm
DIC slider	DIC slider for DIC objectives 10x-20x
Head	Trinocular
	Inclination of 30°
	Interpupillary distance 55mm-75mm
	Diopter adjustable ±5
Nosepiece	Quintuple back ball bearing inner locating
Stage	Base overall size 210x320mm
	Mechanical stage overall size 190x140mm
	Coaxial motion 50x40mm
Focusing System	Coaxial coarse/fine focus system, minimum division of fine focusing 2µm
	Tensional adjustable with upper stop
Reflected illumination	Illumination with field Iris diaphragm and aperture Iris diaphragm
	12V 50W halogen lamp with brightness control
Polarization	Push-pull type polarizer
Analyzer	360° rotatable analyzer
Filter	Blue for reflected light
	Green for reflected light
	Neutral for reflected light
Contrast techniques	Brightfield: Yes
	Darkfield: Yes
	DIC: Yes
	POL Contrast: Yes
Power supply	230V ±10% - 50/60Hz -1Ph - 30W
Dimensions	640x640x560mm
Weight	20kg

Optional accessories

Model	Description
UM O-410DIC-21	Long working distance objective PL L 50x/0.55BD WD=5.10mm
UM O-410DIC-22	Long working distance objective PL L 80x/0.75BD WD=4.00mm
UM O-410DIC-23	Long working distance objective PL L 100x/0.80BD WD=3.00mm
UM CA-410DIC-91	Camera adapter 0.5x
UM CA-410DIC-93	Camera adapter 0.75x

COMPONENTS DIAGRAM

UM 410i DIC





UM 400 I

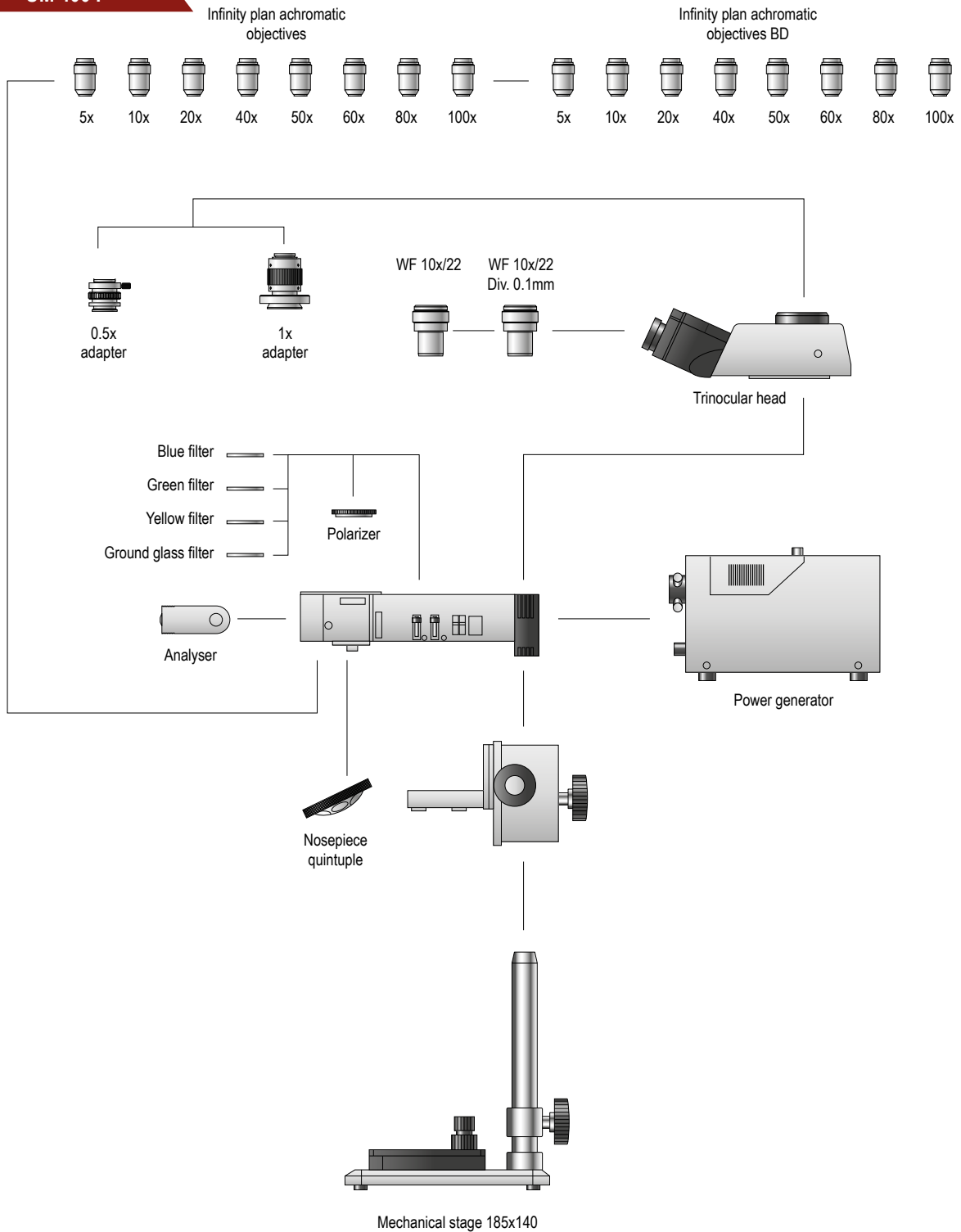


Model	UM 400 I
Optical system	CCIS
Total magnification	50x - 100x - 200x - 500x
Eyepiece	WF 10x (ø22mm)
Plan achromatic objectives long working distance	PL L 5x/0.12 WD=26.10mm
	PL L 10x/0.25 WD=20.20mm
	PL L 20x/0.40 WD=8.80mm
	PL L 50x/0.70 WD=3.68mm
Head	Trinocular
	Inclination of 30°
	Interpupillary distance 55mm-75mm
	Diopter adjustable ±5
Nosepiece	Quintuple back ball bearing inner locating
Stage	Base overall size 300x240mm
	Mechanical stage overall size 185x140mm
	Coaxial motion 35x30mm
Focusing System	Coaxial coarse/fine focus system, minimum division of fine focusing 1µm
	Tensional adjustable with upper stop
Reflected illumination	Epi-illumination with integrated field diaphragm and aperture diaphragm 6V 30W halogen lamp with brightness control
Polarization	Push-pull type polarizer
Analyzer	360° rotatable analyzer
Filter	Yellow for reflected light
	Blue for reflected light
	Green for reflected light
	Frosted glass filter for reflected light
Contrast techniques	Brightfield: Yes
	Darkfield: Not available
	DIC: Not available
	POL Contrast: Yes
Power supply	230V ±10% - 50/60Hz - 1Ph - 30W
Dimensions	640x640x560mm
Weight	17kg

Optional accessories	
Model	Description
UM E-400-01	Eyeiece WF10x (ø22mm) crosshair 0.1mm/Div
UM O-400-21	Long working distance objective PL L 40x/0.60 WD=3.98mm
UM O-400-22	Long working distance objective PL L 60x/0.75 WD=3.18mm
UM O-400-23	Long working distance objective PL L 80x/0.80 WD=1.25mm
UM O-400-24	Long working distance objective PL L 100x/0.85 WD=0.40mm
UM CA-400-91	Camera adapter 0.5x
UM CA-400-92	Camera adapter 1x

COMPONENTS DIAGRAM

UM 400 I



UM 300I BD

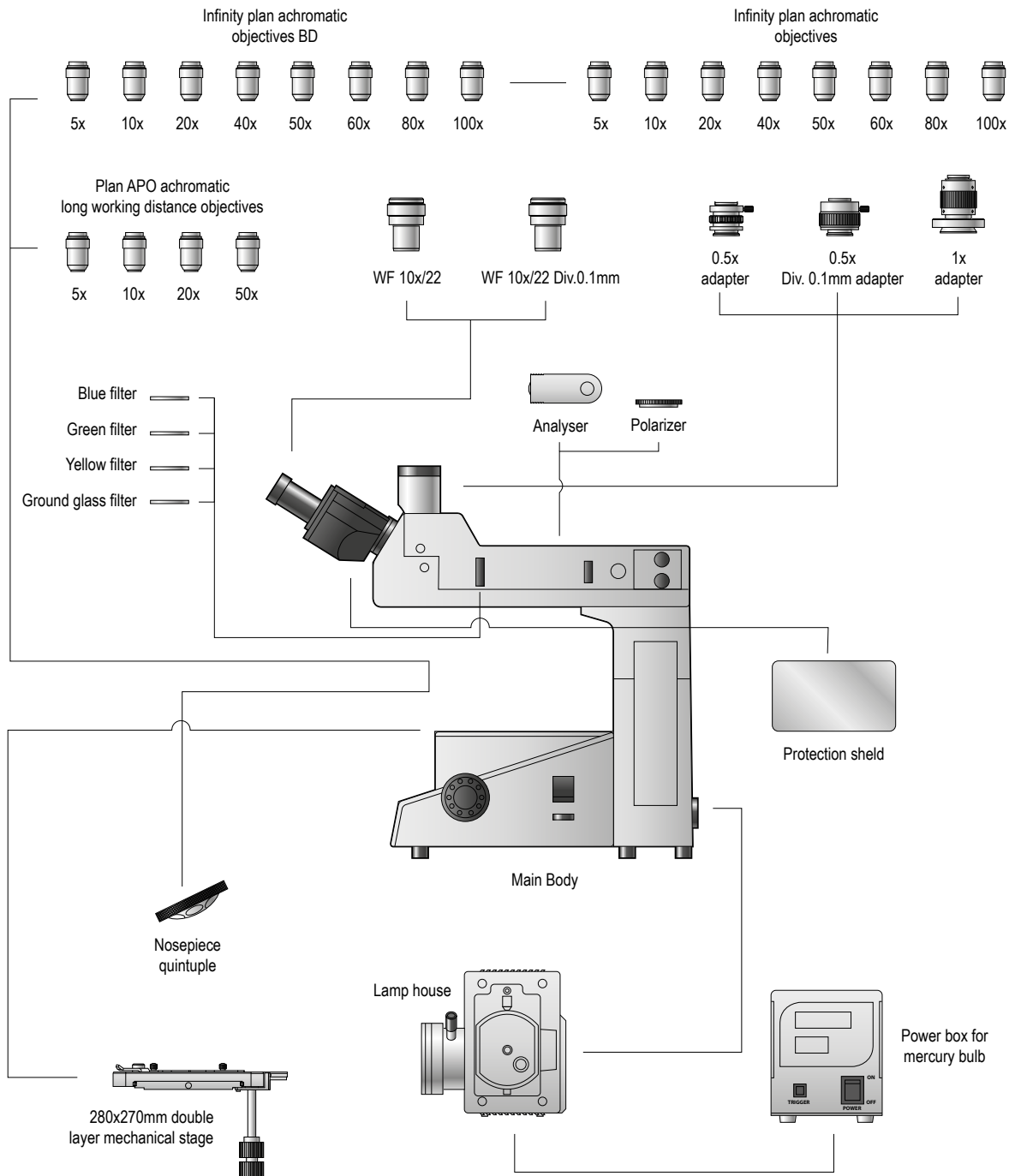


Model	UM 300I BD	UM 300I
Optical system	CCIS	
Total magnification	50x - 100x - 200x - 500x - 800x	
Eyepiece	WF 10x (ø22mm)	
Plan achromatic objectives long working distance	PL L 5x/0.12BD WD=9.70mm	
	PL L 10x/0.25BD WD=9.30mm	
	PL L 20x/0.40BD WD=7.23mm	
	PL L 50x/0.70BD WD=2.50mm	
	PL L 80x/0.80BD WD=1.25mm	
Head	Trinocular	
	Inclination of 22.5°	
	Interpupillary distance 55mm-75mm	
	Diopter adjustable ±5	
Nosepiece	Quintuple back ball bearing inner locating	
Stage	Double layer mechanical with glass insert, overall size 280x270mm	
	Coaxial motion 204x204mm	
Focusing System	Coaxial coarse/fine focus system, minimum division of fine focusing 0.7µm	
	Tensional adjustable with upper stop	
Reflected illumination	Epi-illumination with integrated field diaphragm and aperture diaphragm	
	12V 50W halogen lamp with brightness control	
Polarization	Push-pull type polarizer	
Analyzer	360° rotatable analyzer	
Filter	Yellow for reflected light	
	Blue for reflected light	
	Green for reflected light	
	Frosted glass filter for reflected light	
Contrast techniques	Brightfield: Yes	
	Darkfield: Yes	Darkfield: Not available
	DIC: Not available	
	POL Contrast: Yes	
Power supply	230V ±10% - 50/60Hz -1Ph - 30W	
Dimensions	640x640x560mm	
Weight	18kg	

Optional accessories	
Model	Description
UM E-300-01	Eyepiece WF10x (ø22mm) crosshair 0.1mm/Div
UM O-300-21	Long working distance objective PL L 40x/0.60 WD=3.98mm
UM O-300-22	Long working distance objective PL L 60x/0.70 WD=3.68mm
UM O-300-23	Long working distance objective PL L 100x/0.85 WD=0.40mm
UM CA-300-91	Camera adapter 0.5x
UM CA-300-92	Camera adapter 1x
UM CA-300-93	Camera adapter 0.5x with dividing 0.1mm/Div

COMPONENTS DIAGRAM

UM 300I



UM 210

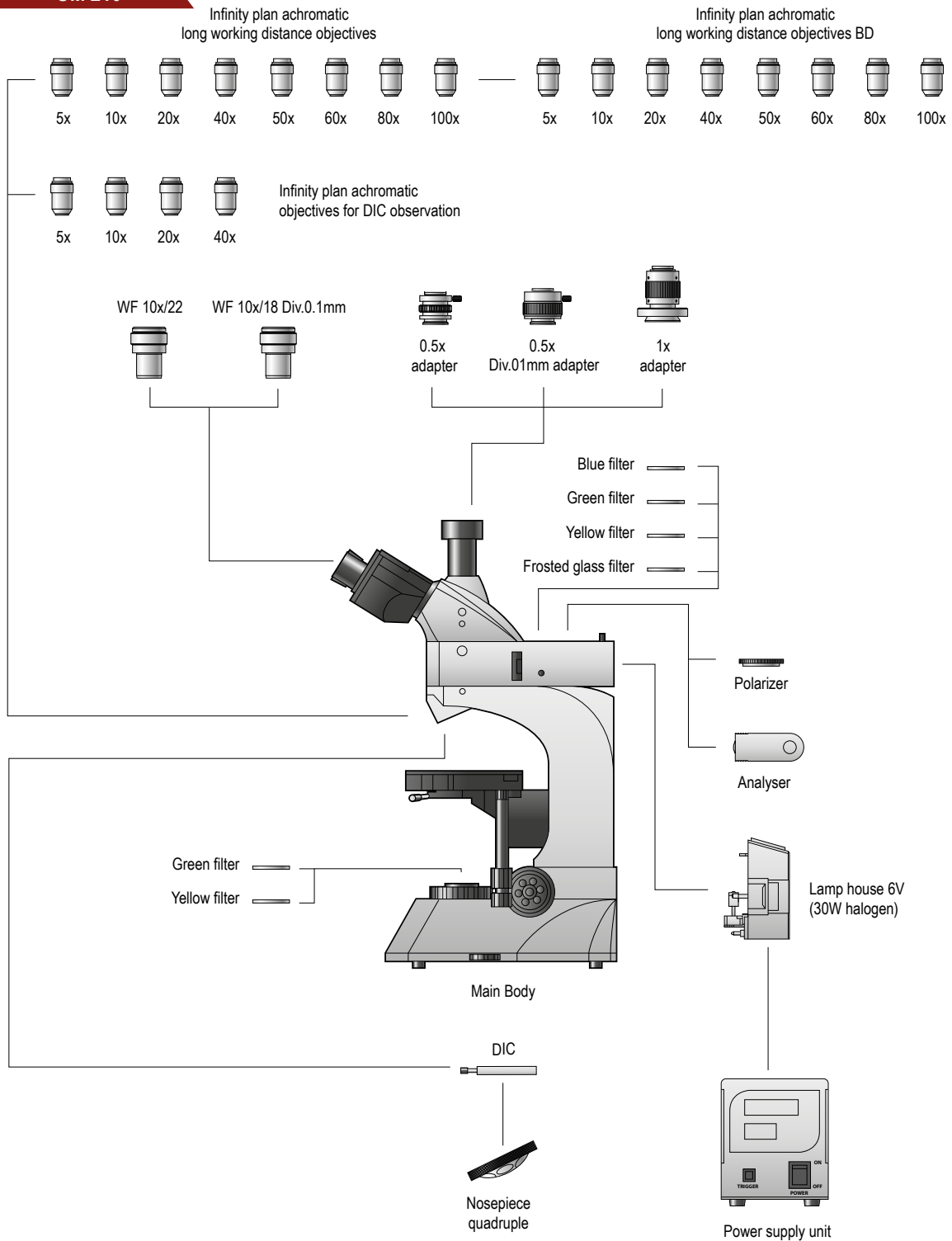


Model	UM 210
Optical system	CCIS
Total magnification	50x - 100x - 400x - 600x
Eyepiece	WF 10x (ø22mm)
Plan achromatic objectives long working distance	PL L 5x/0.12 WD=26.1mm
	PL L 10x/0.25 WD=20,2mm
	PL L 40x/0.60 WD=3.98mm
	PL L 60x/0.75 WD=3.18mm
Head	Trinocular
	Inclination of 30°
	Interpupillary distance 55mm-75mm
	Diopter adjustable ±5
Nosepiece	Quadruple back ball bearing inner locating
Stage	Double layer mechanical with glass insert, overall size 210x140mm
	Coaxial motion 75x50mm
Focusing System	Coaxial coarse/fine focus system, minimum division of fine focusing 2µm
	Tensional adjustable with upper stop
Reflected illumination	Illumination with field diaphragm and aperture diaphragm
	6V 30W halogen lamp with brightness control
Transmitted illumination	Abbe condenser N.A. 1.25
	Collector for illumination with halogen lamp with field diaphragm
	Kohler illumination 6V 20W halogen lamp with brightness control
Polarization	Internal polarizer
Analyzer	360° rotatable analyzer
Filter	Yellow for reflected light
	Blue for reflected light
	Green for reflected light
	Frosted glass filter for reflected light
Contrast techniques	Brightfield: Yes
	Darkfield: Not available
	DIC: Not available
	POL Contrast: Yes
Power supply	230V ±10% - 50/60Hz -1Ph - 30W
Dimensions	480x360x560mm
Weight	9kg

Optional accessories	
Model	Description
UM E-210-01	Eyepiece WF10x (ø18mm) crosshair 0.1mm/Div
UM O-210-21	Long working distance objective PL L 20x/0.40 WD=8.80mm
UM O-210-22	Long working distance objective PL L 50x/0.70 WD=3.68mm
UM O-210-23	Long working distance objective PL L 80x/0.80 (Spring) WD=1.25mm
UM O-210-24	Long working distance objective PL L 100x/0.85 WD=0.40mm
UM F-210-61	Green filter for transmitted light
UM F-210-62	Yellow filter for transmitted light
UM CA-210-91	Camera adapter 0.5x
UM CA-210-92	Camera adapter 1x
UM CA-210-93	Camera adapter 0.5x with dividing 0.1mm/Div

COMPONENTS DIAGRAM

UM 210

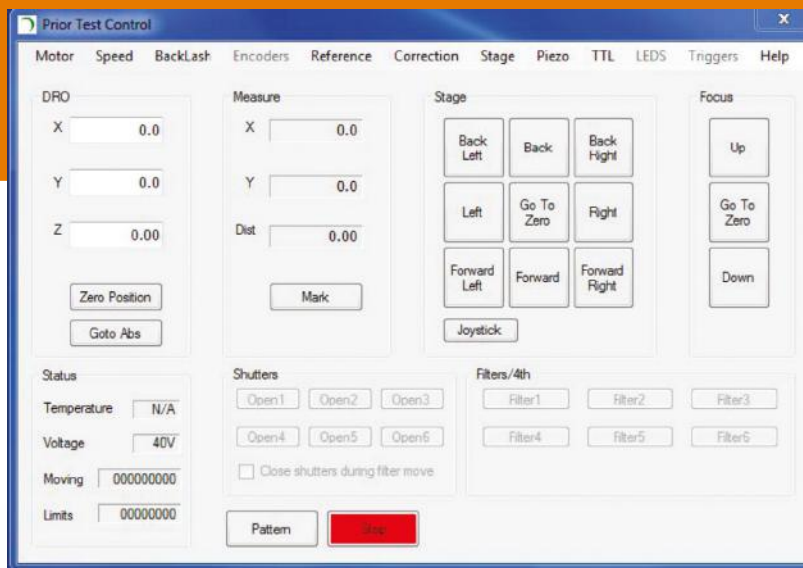


## X-PRO 210

- > Following the philosophy of technology research and continuous development, echoLAB realizes in partnership with PRIOR SCIENTIFIC, leader in microscope automation, a new microscope system with motorized stage.
- > X-PRO 210 motorized system for upright material science microscope UM 210

### Joystick

- > Three axis joysticks for X,Y and Z manual control, available with stage systems to provide fast and responsive control
- > Two programmable Hot Keys for a variety of system controls.



### Software

- > X-PRO controllers are supplied with software development toolkit which includes comprehensive dll, VB demo program and a full complement of ASCII commands. The developer can use either the USB or the RS232 serial port for software communications.
- > Through software is possible to move the stage and focusing directly from PC by two methods:
  - 1) Text file editing, with all commands for stage and focus.
  - 2) Using software like a joystick or inserting coordinates X,Y and Z for sample movement in the desired position.

### Focus drive X

- > No twist cable connection
- > 0.002µm minimum step size
- > Easy to install
- > Up to 20Rev/s top speed. Simple easy to fit Z solutions for most microscopes
- > The motorized focus control provides step sizes as small as 0.002µm, giving excellent resolution for precise and repeatable focusing in the Z-axis. For large movements when speed is required, the focus motor can be driven at speeds of up to 20 revolutions per second
- > Drive with rotating cable system, designed to prevent cable twisting.





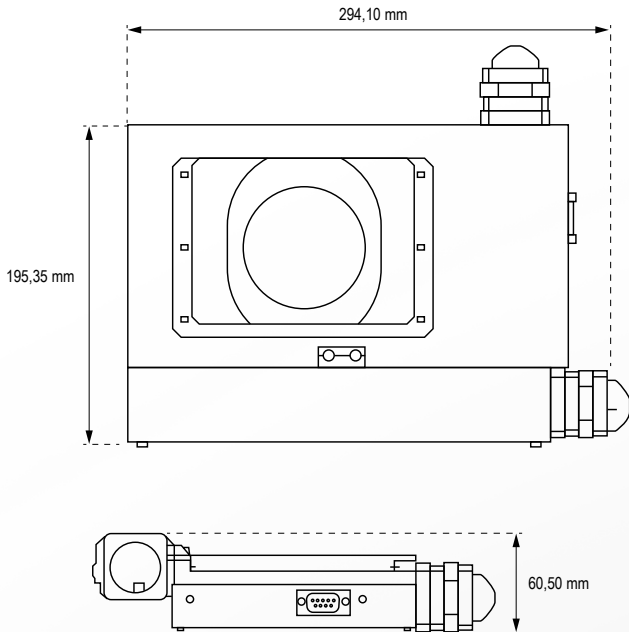
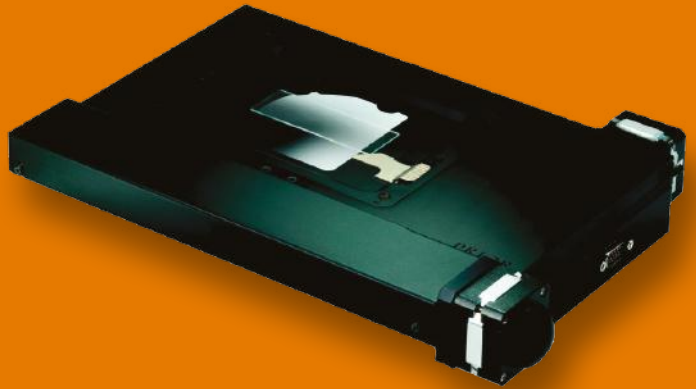
# X-PRO 210

**Motorized stage**

X-PRO offers high level of flexibility. It is the perfect choice for researchers who require a precision motorized stage.

**Features:**

The unique S curve acceleration algorithm allows fast, smooth positioning without vibration, reducing disruption to samples. Controllable via joystick, RS232 or USB



Travel Range	125x75mm
Repeatability	±5µm
Resolution	1µm
Linear slides	3mm ball bearing
Drive mechanism	Anti-backlash precision lead screw
Limit switches	X and Y standard, semi adjustable

**Sample holders**

Wide range of sample holders available for one or more samples per time:

