

NEW
Models Included

VAN GUARD

Microscopes

Product Catalog

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VAN GUARD



INFINITE ♦ SOLUTIONS

VIOS
Infinity Optics

1400 Series Clinical Microscopes



High-Eyepoint Eyepieces (FD 20mm)



VIOS Infinity-Corrected Optics



Advanced Ergonomics



Integrated Koehler Illumination



VAN GUARD 1400 Series Clinical Microscopes

Featuring vivid, infinity-corrected optics, the 1400 Series Clinical Microscopes are the flagship of the VanGuard line. Combining top performance with highly-advanced features, they stand up to the rigorous requirements of the even the most demanding laboratory.

Built around an industry-leading, full-size frame, the 1400 Series models eliminate the fatigue and strain associated with working long hours over a microscope. Low-position focusing controls and long drop-down X-Y controls ensure simple, consistent, and comfortable use.

Wide ranges of models are available in Brightfield & Phase Contrast configurations. Choose from standard achromatic or plan achromatic objectives; binocular or trinocular viewing heads.

Various camera packages are available as options; including digital, video, and 35mm systems.

All models feature 10X High-Eyepoint WideField eyepieces, 20W variable quartz halogen illumination, field diaphragms for Koehler illumination, and are backed by a 5-Year warranty.



Model 1423PHI



Model 1433PHI

VAN GUARD Technical Specifications

Optical System	VIOS Infinity-Corrected**
Viewing Head	Binocular (Seidentopf) or Trinocular (Seidentopf); 30° Inclination; 360° Rotatable; 55-75mm Interpupillary; -6 to +6 Dioptic
Camera Port	20/80 Split
Eyepieces	10X WideField; 20mm F.D.; High-Eyepoint; Rubber Eyecups
Nosepiece	5-Position; Reverse Pitch
Objectives	Achromatic, Plan Achromatic, or Phase Contrast; 4X (0.10 N.A.), 10X (0.25 N.A.), 20X (0.40 N.A.), 40X (0.65 N.A.), 100X (1.25 N.A.); DIN Standard
Stage	Rectangular 160x140mm Mechanical; Drop-Down, Right-Hand, Rack & Pinion X-Y Control, 75 x 50mm Cross Travel Range; Removable Spring-Clip Slide Holder; Chemical-Resistant Finish
Focusing	Coaxial, Low Position, Coarse/Fine Controls; Tension Adjustment; Safety Auto-Stop; 40mm Focusing Range; 0.002mm Precision
Condenser	1.25 N.A. Abbe; Iris Diaphragm; Rack & Pinion Focusing Control; 10X/20X, 40X, 100X Zemike Phase Stops (Phase Models); Telescoping Eyepiece For Phase Annuli Centering (Phase Models)
Illumination	20W Variable Quartz Halogen; Field Diaphragms For Koehler; Filter Holder On Collector
Base	260 x 170mm; Anti-Skid Rubber Feet
Body	Ergonomic; Stain-Resistant Enamel Finish
Voltage	110V (220V Available On Request)
Warranty	5-Year Optical/Mechanical; 1-Year Electrical
Supplied With	Spare Lamps & Fuses, Dust Cover, Operation Manual

**Excludes Models 1420BR & 1430BR

VAN GUARD Ordering Information

Model	Head	Objective Magnification	Objective Type	Infinity Optics	Brightfield	Phase Contrast	Darkfield	Koehler	Illumination	Dimensions	Weight
1420BR	Binocular	4X, 10X, 40X, 100X	Achromatic	×	✓	×	Optional	✓	20W Variable Quartz Halogen	380 x 220 x 425mm	8.3kg
1430BR	Trinocular	4X, 10X, 40X, 100X	Achromatic	×	✓	×	Optional	✓	20W Variable Quartz Halogen	380 x 220 x 425mm	8.5kg
1421BRi	Binocular	4X, 10X, 40X, 100X	Plan Achromatic	✓	✓	×	Optional	✓	20W Variable Quartz Halogen	380 x 220 x 425mm	8.8kg
1431BRi	Trinocular	4X, 10X, 40X, 100X	Plan Achromatic	✓	✓	×	Optional	✓	20W Variable Quartz Halogen	380 x 220 x 425mm	9.0kg
1423PHI	Binocular	10X, 20X, 40X, 100X	Plan Achromatic	✓	✓	✓	Optional	✓	20W Variable Quartz Halogen	380 x 220 x 425mm	9.1kg
1433PHI	Trinocular	10X, 20X, 40X, 100X	Plan Achromatic	✓	✓	✓	Optional	✓	20W Variable Quartz Halogen	380 x 220 x 425mm	9.3kg



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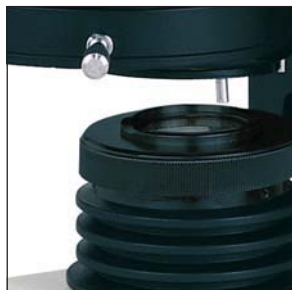
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INFINITE ♦ SOLUTIONS

1200CM Series Clinical Microscopes



VAN GUARD 1200CM Series Clinical Microscopes

VanGuard 1200CM Series Clinical Microscopes provide the necessary specifications for diagnostic & educational use in medical/veterinary clinics, universities, and industrial laboratories.

Wide ranges of models are available in Brightfield & Phase Contrast configurations. Choose from standard achromatic or plan achromatic objectives; monocular, binocular, or trinocular viewing heads.

Various camera packages are available as options; including digital, video, and 35mm systems.

All models feature 10X WideField eyepieces, 20W variable quartz halogen or battery-powered LED illumination, field diaphragms for Koehler illumination, and are backed by a 5-Year warranty.



Model 1221CM



Model 1233CM

VAN GUARD Technical Specifications

Optical System	Fixed 160mm Correction
Viewing Head	Monocular, Binocular (Seidentopf), or Trinocular (Seidentopf); 30° Inclination; 360° Rotatable; 55-75mm Interpupillary; -5 to +5 Dioptic
Camera Port	0/100 Split
Eyepieces	10X WideField; 18mm F.D.
Nosepiece	4-Position; Reverse Pitch
Objectives	Achromatic, Plan Achromatic, or Phase Contrast; 4X(0.10 N.A.), 10X(0.25 N.A.), 20X(0.40 N.A.), 40X(0.65 N.A.), 100X(1.25 N.A.); DIN Standard
Stage	Rectangular 135x125mm Mechanical; Drop-Down, Right-Hand, Rack & Pinion X-Y Control, 70 x 30mm Cross Travel Range; Removable Spring-Clip Slide Holder; Chemical-Resistant Finish
Focusing	Coaxial, Low-Position, Coarse/Fine Controls; Tension Adjustment; Safety Auto-Stop; 40mm Focusing Range; 0.002mm Precision
Condenser	1.25 N.A. Abbe; Iris Diaphragm; Swing-Out Filter Holder; Rack & Pinion Focusing Control; 10X/20X, 40X, 100X Zernike Phase Stops (Phase Models); Telescoping Eyepiece For Phase Annuli Centering
Illumination	20W Variable Quartz Halogen; Field Diaphragm For Koehler
Base	210 x 180mm; Anti-Skid Rubber Feet
Body	Stain-Resistant Enamel Finish
Voltage	110V (220V Available On Request)
Warranty	5-Year Optical/Mechanical; 1-Year Electrical
Supplied With	Spare Lamps & Fuses, Dust Cover, Operation Manual

VAN GUARD Ordering Information

Model	Head	Objective Magnification	Objective Type	Brightfield	Phase Contrast	Koehler	Illumination	Dimensions	Weight
1210CM	Monocular	4X, 10X, 40X, 100X	Achromatic	✓	×	✓	20W Variable Quartz Halogen	210 x 180 x 380mm	7.0kg
1220CM	Binocular	4X, 10X, 40X, 100X	Achromatic	✓	×	✓	20W Variable Quartz Halogen	210 x 180 x 380mm	7.0kg
1220CM-BP	Binocular	4X, 10X, 40X, 100X	Achromatic	✓	×	×	Battery-Powered LED	210 x 180 x 380mm	7.0kg
1230CM	Trinocular	4X, 10X, 40X, 100X	Achromatic	✓	×	✓	20W Variable Quartz Halogen	210 x 180 x 400mm	7.2kg
1211CM	Monocular	4X, 10X, 40X, 100X	Plan Achromatic	✓	×	✓	20W Variable Quartz Halogen	210 x 180 x 380mm	7.0kg
1221CM	Binocular	4X, 10X, 40X, 100X	Plan Achromatic	✓	×	✓	20W Variable Quartz Halogen	210 x 180 x 380mm	7.0kg
1231CM	Trinocular	4X, 10X, 40X, 100X	Plan Achromatic	✓	×	✓	20W Variable Quartz Halogen	210 x 180 x 400mm	7.2kg
1212CM	Monocular	10X, 20X, 40X, 100X	Achromatic	✓	✓	✓	20W Variable Quartz Halogen	210 x 180 x 380mm	7.8kg
1222CM	Binocular	10X, 20X, 40X, 100X	Achromatic	✓	✓	✓	20W Variable Quartz Halogen	210 x 180 x 380mm	7.8kg
1232CM	Trinocular	10X, 20X, 40X, 100X	Achromatic	✓	✓	✓	20W Variable Quartz Halogen	210 x 180 x 400mm	8.0kg
1213CM	Monocular	10X, 20X, 40X, 100X	Plan Achromatic	✓	✓	✓	20W Variable Quartz Halogen	210 x 180 x 380mm	7.8kg
1223CM	Binocular	10X, 20X, 40X, 100X	Plan Achromatic	✓	✓	✓	20W Variable Quartz Halogen	210 x 180 x 380mm	7.8kg
1233CM	Trinocular	10X, 20X, 40X, 100X	Plan Achromatic	✓	✓	✓	20W Variable Quartz Halogen	210 x 180 x 400mm	8.0kg





Compound Microscopes

1100AMH Series

- Intermediate Level
- Magnification Up to 1000X
- Iris Diaphragm Condenser
- 20W Variable Halogen Illumination



The VanGuard 1100AMH Series Compound Microscopes feature DIN optics, the choice of 4 different viewing heads, mechanical stages, and 20W variable quartz halogen illumination. An excellent choice for schools, veterinarians, and industrial applications.

Viewing Head. Monocular, dual-monocular, binocular (Sliding), and trinocular (Sliding) heads rotate 360° and are inclined at 45°. Binocular and trinocular head also feature dioptic (-5 to +5) & interpupillary adjustment (53-72mm) mechanisms.

Eyepieces. 10X Widefield (DIN) with a field number of 18.

Nosepiece. Quadruple nosepiece with positive stops.

Objectives. DIN achromatic 4X/0.10, 10X/0.25, and 40X/0.65, and 100X/1.25 (Oil) brightfield objectives.

Stage. Graduated, integrated mechanical stage (120x120mm); left-hand coaxial drop-down X-Y controls; 25x60mm movable range.

Focusing Movement. Separate coarse and fine focus controls featuring a slip-clutch mechanism which protects the gears from damage by allowing the knobs to turn even when the stage has reached the upper/lower travel stops; also includes a tension control mechanism.

Condenser. 1.25 N.A. Abbe condenser with iris diaphragm and swing-in filter holder; focusable with a forward-positioned lever.

Illumination. 20W variable halogen light source. Comes with blue and neutral density filters. 0.5A, 250V fuse.

Voltage. 110V (220V available as a special order item).

Base. Stable 195x150mm base fitted with anti-skid rubber feet.

Body. Cast-metal body with stain-resistant enamel finish.

Dimensions. 195mm (L) x 150mm (W) x 370mm (H); 5.0kg.

Supplied With. 20W Halogen Lamp (Spare) (cat. no. 1200-20WHL), 0.5A, 250V Fuse (Spare) (cat. no. 1200-FS1), Dust Cover, Operation Manual



Model 1113AMH

Ordering Information

Model	Head	Type	Objective Magnification	Objective Type	Illumination
1111AMH	Monocular	Brightfield	4X, 10X, 40X, 100X (Oil)	Achromatic	20W Variable Quartz Halogen
1112AMH	Dual-Monocular	Brightfield	4X, 10X, 40X, 100X (Oil)	Achromatic	20W Variable Quartz Halogen
1113AMH	Binocular	Brightfield	4X, 10X, 40X, 100X (Oil)	Achromatic	20W Variable Quartz Halogen
1115AMH	Trinocular	Brightfield	4X, 10X, 40X, 100X (Oil)	Achromatic	20W Variable Quartz Halogen





Compound Microscopes

Model 110 AMI



- Intermediate Level
- Magnification Up to 400X
- Iris Diaphragm Condenser
- 20W Variable Illumination

The VanGuard Model 1109AMI Compound Microscope features DIN optics, locked-on eyepiece and stage clips, an iris diaphragm condenser, and 20W variable incandescent illumination. An excellent choice for schools, veterinarians, and industrial applications.

Viewing Head. Monocular head rotates 360° and is inclined at 45°.

Eyepiece. Locked-on 10X Widefield (DIN) with a field number of 18.

Nosepiece. Triple nosepiece with positive stops.

Objectives. DIN achromatic 4X/0.10, 10X/0.25, and 40X/0.65.

Stage. 120x130mm with locked-on, spring-loaded stage clips.

Focusing Movement. Separate coarse and fine focus controls featuring a slip-clutch mechanism which protects the gears from damage by allowing the knobs to turn even when the stage has reached the upper/lower travel stops; also includes a tension control mechanism.

Condenser. 0.65 N.A. condenser with iris diaphragm and swing-in filter holder; focusable with a forward-positioned lever.

Illumination. 20W variable incandescent light source. Comes with blue and neutral density filters. 0.5A, 250V fuse.

Voltage. 110V (220V available as a special order item).

Base. Stable 200x125mm base fitted with anti-skid rubber feet.

Body. Cast-metal body with stain-resistant enamel finish.

Dimensions. 200mm (L) x 125mm (W) x 355mm (H); 3.0kg.

Supplied With. 20W Incandescent Lamp (Spare) (cat. no. 1100-20WIL), 0.5A, 250V Fuse (Spare) (cat. no. 1200-FS1), Dust Cover, Operation Manual



Ordering Information

Model	Head	Type	Objective Magnification	Objective Type	Illumination
1109AMI	Monocular	Brightfield	4X, 10X, & 40X	Achromatic (DIN)	20W Incandescent





Compound Microscopes

Model 1102SM



- Intermediate Level
- Magnification Up to 400X
- Exceptional Durable Frame
- 20W Illumination

The VanGuard Model 1102SM Compound Microscope features DIN optics, locked-on eyepiece and stage clips, and 20W incandescent illumination. Model 1102SM is perfectly suited for basic industrial and educational applications.

Viewing Head. Monocular; frame inclines back to 90°.

Eyepiece. Locked-on 10X Widefield (DIN).

Nosepiece. Triple nosepiece with positive stops.

Objectives. DIN achromatic 4X/0.10, 10X/0.25, and 40X/0.65.

Stage. 120x115mm with locked-on, spring-loaded stage clips.

Focusing Movement. Separate coarse and fine focus controls featuring a slip-clutch mechanism which protects the gears from damage by allowing the knobs to turn even when the stage has reached the upper/lower travel stops; also includes a tension control mechanism.

Condenser. 0.65 N.A. condenser with 5-position disc diaphragm.

Illumination. 20W incandescent light source.

Voltage. 110V (220V available as a special order item).

Base. Stable 200x115mm base fitted with anti-skid rubber feet.

Body. Sturdy steel body with stain-resistant enamel finish.

Dimensions. 200mm (L) x 115mm (W) x 335mm (H); 3.2kg.

Supplied With. 20W Incandescent Lamp (Spare) (cat. no. 1100-20WIL), Dust Cover, Operation Manual



Ordering Information

Model	Head	Type	Objective Magnification	Objective Type	Illumination
1102SM	Monocular	Brightfield	4X, 10X, & 40X	Achromatic (DIN)	20W Incandescent





Compound Microscopes

Model 1101 M

- Elementary Level
- Magnification Up to 400X
- 20W Illumination



The VanGuard Model 1101EM Compound Microscope features DIN optics, locked-on eyepiece and stage clips, and 20W incandescent illumination. Model 1101SM is an excellent instrument for the introduction to elementary microscopy.

Viewing Head. Monocular head rotates 360° and is inclined at 45°.

Eyepiece. Locked-on 10X Widefield (DIN).

Nosepiece. Triple nosepiece with positive stops.

Objectives. DIN achromatic 4X/0.10, 10X/0.25, and 40X/0.65.

Stage. 90x90mm with locked-on, spring-loaded stage clips.

Focusing Movement. Coarse focus controls featuring a slip-clutch mechanism which protects the gears from damage by allowing the knobs to turn even when the stage has reached the upper/lower travel stops.

Condenser. 0.65 N.A. condenser with 6-position disc diaphragm.

Illumination. 20W incandescent light source. 0.5A, 250V fuse.

Voltage. 110V (220V available as a special order item).

Base. Stable 155x110mm base fitted with anti-skid rubber feet.

Body. Cast-metal body with stain-resistant enamel finish.

Dimensions. 155mm (L) x 110mm (W) x 305mm (H); 1.8kg.

Supplied With. 20W Incandescent Lamp (Spare) (cat. no. 1100-20WIL), 0.5A, 250V Fuse (Spare) (cat. no. 1200-FS1), Dust Cover, Operation Manual



Ordering Information

Model	Head	Type	Objective Magnification	Objective Type	Illumination
1101EM	Monocular	Brightfield	4X, 10X, & 40X	Achromatic (DIN)	20W Incandescent





Fluorescence Microscopes

1 00 L Series

- Professional Level
- Fluorescence Phase Contrast Brightfield
- Precision Optics



The 1400FL Series Fluorescence Microscopes are the flagship of the VanGuard line. Combining top performance with highly-advanced features and optics, the 1400FL Series models produce fluorescence images of the utmost in clarity. Available with brightfield or phase contrast / brightfield.

Viewing Head. Trinocular (Seidentopf) heads rotate 360° and are inclined at 30°. Both models feature interpupillary and dioptic adjustment. The heads feature a sliding main prism (30 / 70 split) to provide full-time imaging when the vertical tube is in use (70% of the image to the vertical tube and 30% to the viewing eyetubes).

Eyepieces. 10X Widefield (DIN) with a field number of 18.

Nosepiece. Quintuple, reversed, ball-bearing nosepiece with high-grade lubricant and positive stops. The nosepiece is reversed (inward-facing) to allow for easier manipulation of slides and to aid in keeping the objectives clean.

Objectives. Achromatic fluorescence objectives come standard on both models. Model 1482FL features plan achromatic brightfield objectives. Model 1486FL features plan achromatic phase contrast and brightfield objectives. All objectives are made to DIN standards and are coated.

Stage. Delivering a high level of fluid motion control and longevity, the stage measures 140x140mm. Features a removable spring-clip slide holder and a chemical-resistant finish. Motion is controlled by a right-hand, low-position coaxial control and is driven by a rack and pinion system.

Focusing Movement. Coaxial, ultra low-position coarse and fine focus controls feature a 40mm focusing range and are graduated to 2 microns per division. Fitted with tension adjustment and safety autostop.

Condenser. Model 1482FL comes with a 1.25 N.A. Abbe condenser. Model 1486FL comes with a 1.25 N.A. Zernike condenser with phase annulus rings for 10X, 20X, 40X, & 100X; also has a "0" setting for brightfield work. All condensers are mounted on a rack and pinion focusing mechanism and feature spring-loaded centering knobs and an iris diaphragm with a swing-in filter holder.

Lower Illumination. 20W variable quartz halogen light source. Comes with blue, green (Model 1486FL only), and neutral density filters. 0.25A, 250V (2 ea.) fuses.

Upper Illumination. Features a 100W HBO mercury light source which is mounted to the rear and is protected by a sturdy, all-metal housing. Lamp is easily focused and centered with the front-mounted lamp viewer. External power supply provides constant, even light and features an electronic timer which automatically logs the amount of time the mercury lamp is in use. 5.0A, 250V fuse.

Fluorescence Filters. Features a 3-position (2 filter positions and 1 OFF position), sliding, filter cube assembly. Fluorescence models come standard with 2 broadband filters (blue & green). Custom fluorescence filters available on request.

Base. Stable 225x160mm base fitted with anti-skid rubber feet.

Body. Cast-metal, ergonomic body with stain-resistant enamel finish.

Dimensions. 225mm (L) x 160mm (W) x 465mm (H); 10.7kg



Model 1482FL



Specifications

Viewing Head: Trinocular
Viewing Head Type: Seidentopf
Head Rotation: 360°
Head Inclination: 30°
Sliding Prism: 70 / 30 Split
Interpupillary Adjustment: 55-75mm
Dioptric Adjustment: -5 to +5
Eyepiece Magnification: 10X Widefield
Eyepiece Field Diameter: 18mm
Optional Eyepieces: 15X (Field Diameter: 11mm)
 20X (Field Diameter: 11mm)
Nosepiece: Quintuple / Reversed
Fluorescence Objectives: 4X [0.10 N.A., 17.0mm W.D., 4.5mm F.O.V.]
 (Achromatic) 10X [0.25 N.A., 8.0mm W.D., 1.8mm F.O.V.]
 40X [0.65 N.A., 0.40mm W.D., 0.45mm F.O.V.]
 100X [1.25 N.A., 0.25mm W.D., 0.18mm F.O.V.]
Phase Contrast Objectives: 10X [0.25 N.A., 8.0mm W.D., 1.8mm F.O.V.]
 (Plan Achromatic) 20X [0.40 N.A., 0.50mm W.D., 0.9mm F.O.V.]
 40X [0.65 N.A., 0.40mm W.D., 0.45mm F.O.V.]
 100X [1.25 N.A., 0.25mm W.D., 0.18mm F.O.V.]
Brightfield Objectives: 4X [0.10 N.A., 17.0mm W.D., 4.5mm F.O.V.]
 (Plan Achromatic) 10X [0.25 N.A., 8.0mm W.D., 1.8mm F.O.V.]
 20X [0.40 N.A., 0.50mm W.D., 0.9mm F.O.V.] (Optional)
 40X [0.65 N.A., 0.40mm W.D., 0.45mm F.O.V.]
 60X [0.85 N.A., 0.30mm W.D., 0.3mm F.O.V.] (Optional)
 100X [1.25 N.A., 0.25mm W.D., 0.18mm F.O.V.]
Fluorescence Filter Cubes: Blue Broadband
 (Peak: 445nm, Excitation: 420-485nm, Emission: 520nm+)
 Intended Dyes: FITC, Acridine Orange, & Propidium Iodide
 Green Broadband
 (Peak: 546nm, Excitation: 535-550nm, Emission: 580nm+)
 Intended Dyes: Ethidium Bromide & TRITC
Custom Fluorescence Filters: Available On Request
Stage Dimensions: 140mm x 140mm
Stage Motion: Right-Hand Coaxial Control / Rack & Pinion Drive
Stage Movement Range: 50x75mm
Focusing Movement: Coaxial Coarse & Fine Controls / Safety Autostop
Focusing Range: 40mm
Focusing Graduation: 2 Microns Per Division
Brightfield Condenser: 1.25 N.A. Abbe Condenser w/ Iris Diaphragm
Phase Contrast Condenser: 1.25 N.A. Zernike Condenser w/ Iris Diaphragm
Phase Centering Tool: Telescoping Eyepiece [Model 1486FL]
Lower Illumination: 20W / 6V Variable Quartz Halogen
Upper Illumination: 100W HBO Mercury
Fuse: 0.25A, 250V (2 ea.) [Microscope]
 5.0A, 250V [External Power Supply]
Voltage: 110V [Standard]; 220V [Special Order]
Base Dimensions: 225mm x 160mm
Overall Dimensions: 225mm (L) x 160mm (W) x 465mm (H)
Weight: 10.7kg
Supplied With: 20W Halogen Lamp (Spare) (cat. no. 1400-20WHL),
 0.25A, 250V Fuse (Spare) (cat. no. 1400-FS1),
 Dust Cover, Operation Manual



Model 1482FL (Side View)



External Power Supply

Ordering Information

Model	Head	Type	Objective Magnification	Objective Type	Upper Illumination	Lower Illumination
1482FL	Trinocular	Fluorescence	4X, 10X, 40X, 100X (Oil)	Achromatic	100W HBO Mercury	20W Variable Quartz Halogen
		Brightfield	4X, 10X, 40X, 100X (Oil)	Plan Achromatic		
1486FL	Trinocular	Fluorescence	4X, 10X, 40X, 100X (Oil)	Achromatic	100W HBO Mercury	20W Variable Quartz Halogen
		Phase Contrast	10X, 20X, 40X, 100X (Oil)	Plan Achromatic		
		Brightfield	4X, 10X, 40X, 100X (Oil)	Plan Achromatic		





Fluorescence Microscopes

1200 CM Series



- Research Level
- Fluorescence Phase Contrast Rightfield
- Precision Optics

VanGuard 1200ECM Series Fluorescence Microscopes provide the necessary specifications for diagnostic & educational use in medical/veterinary clinics, universities, and industrial laboratories.

Viewing Head. Trinocular (Seidentopf) heads rotate 360° and are inclined at 30°. Both models feature interpupillary and dioptic adjustment. The heads feature a sliding main prism (100/100 split) to provide either 100% of the image to the vertical tube, or 100% of the image to the eyepieces.

Eyepieces. 10X Widefield (DIN) with a field number of 18.

Nosepiece. Quadruple, reversed, ball-bearing nosepiece with high-grade lubricant and positive stops. The nosepiece is reversed (inward-facing) to allow for easier manipulation of slides and to aid in keeping the objectives clean.

Objectives. Achromatic objectives come standard on both models. Model 1282ECM features plan achromatic brightfield objectives. Model 1286ECM features plan achromatic phase contrast and brightfield objectives. All objectives are made to DIN standards and are coated.

Stage. Delivering a high level of fluid motion control and longevity, the stage measures 160x140mm. Features a removable spring-clip slide holder and a chemical-resistant finish. Motion is controlled by a right-hand, low-position coaxial control and is driven by a rack and pinion system.

Focusing Movement. Coaxial, low-position coarse and fine focus controls feature a 40mm focusing range and are graduated to 2 microns per division. Fitted with tension adjustment and safety autostop.

Condenser. Model 1282ECM comes with a 1.25 N.A. Abbe condenser. Model 1286ECM comes with a 1.25 N.A. Zernike condenser with phase annulus rings for 10X, 25X, 40X, & 100X; also has a "0" setting for brightfield work. All condensers are mounted on a rack and pinion focusing mechanism and feature spring-loaded centering knobs and an iris diaphragm with a swing-in filter holder.

Lower Illumination. 20W variable quartz halogen light source. Comes with blue, green (Model 1286ECM only), and neutral density filters. 0.5A, 250V fuse.

Upper Illumination. Features a 100W HBO mercury light source which is mounted to the rear and is protected by a sturdy, all-metal housing. External power supply provides constant, even light. 5.0A, 250V fuse.

Fluorescence Filters. Features a 3-position (2 filter positions and 1 OFF position), sliding, filter cube assembly. Fluorescence models come standard with 2 broad band filters (blue & green).

Base. Stable 250x200mm base fitted with anti-skid rubber feet.

Body. Cast-metal, ergonomic body with stain-resistant enamel finish.

Dimensions. 250mm (L) x 200mm (W) x 435mm (H); 8.8kg.



Model 1286ECM



Specifications

Viewing Head:	Trinocular	
Viewing Head Type:	Seidentopf	
Head Rotation:	360°	
Head Inclination:	30°	
Sliding Prism:	100 / 100 Split	
Interpupillary Adjustment:	55-75mm	
Dioptic Adjustment:	-5 to +5	
Eyepiece Magnification:	10X Widefield	
Eyepiece Field Diameter:	18mm	
Optional Eyepieces:	15X (Field Diameter: 11mm) 20X (Field Diameter: 11mm)	
Nosepiece:	Quadruple / Reversed	
Fluorescence Objectives:	25X	[0.65 N.A., 0.62mm W.D., 0.72mm F.O.V.]
<i>(Achromatic)</i>	40X	[1.00 N.A., 0.25mm W.D., 0.45mm F.O.V.]
Phase Contrast Objectives:	10X	[0.25 N.A., 8.0mm W.D., 1.8mm F.O.V.]
<i>(Plan Achromatic)</i>	25X	[0.40 N.A., 0.50mm W.D., 0.9mm F.O.V.]
	40X	[0.65 N.A., 0.40mm W.D., 0.45mm F.O.V.]
	100X	[1.25 N.A., 0.25mm W.D., 0.18mm F.O.V.]
Brightfield Objectives:	4X	[0.10 N.A., 17.0mm W.D., 4.5mm F.O.V.]
<i>(Plan Achromatic)</i>	10X	[0.25 N.A., 8.0mm W.D., 1.8mm F.O.V.]
	25X	[0.40 N.A., 0.50mm W.D., 0.9mm F.O.V.] (Optional)
	40X	[0.65 N.A., 0.40mm W.D., 0.45mm F.O.V.]
	60X	[0.85 N.A., 0.30mm W.D., 0.3mm F.O.V.] (Optional)
	100X	[1.25 N.A., 0.25mm W.D., 0.18mm F.O.V.]
Fluorescence Filter Cubes:	Blue Broadband <i>(Peak: 445nm, Excitation: 420-485nm, Emission: 520nm+)</i> <i>Intended Dyes: FITC, Acridine Orange, & Propidium Iodide</i>	
	Green Broadband <i>(Peak: 546nm, Excitation: 535-550nm, Emission: 580nm+)</i> <i>Intended Dyes: Ethidium Bromide & TRITC</i>	
Stage Dimensions:	140mm x 160mm	
Stage Motion:	Right-Hand Coaxial Control / Rack & Pinion Drive	
Stage Movement Range:	50x75mm	
Focusing Movement:	Coaxial Coarse & Fine Controls / Safety Autostop	
Focusing Range:	40mm	
Focusing Graduation:	2 Microns Per Division	
Brightfield Condenser:	1.25 N.A. Abbe Condenser w/ Iris Diaphragm	
Phase Contrast Condenser:	1.25 N.A. Zernike Condenser w/ Iris Diaphragm	
Phase Centering Tool:	Telescoping Eyepiece [Phase Contrast Models]	
Lower Illumination:	20W Variable Quartz Halogen	
Upper Illumination:	100W HBO Mercury	
Fuse:	0.5A, 250V [Microscope] 5.0A, 250V [External Power Supply]	
Voltage:	110V [Standard]; 220V [Special Order]	
Base Dimensions:	250mm x 220mm	
Overall Dimensions:	250mm (L) x 200mm (W) x 435mm (H)	
Weight:	8.8kg	
Supplied With:	20W Halogen Lamp (Spare) (cat. no. 1200-20WHL), 0.5A, 250V Fuse (Spare) (cat. no. 1200-FS1), Dust Cover, Operation Manual	



Model 1286ECM (Side View)



External Power Supply

Ordering Information

Model	Head	Type	Objective Magnification	Objective Type	Upper Illumination	Lower Illumination
1282ECM	Trinocular	Fluorescence	25X, 40X (Glycerin)	Achromatic	100W HBO Mercury	20W Variable Quartz Halogen
		Brightfield	4X, 10X, 40X, 100X (Oil)	Plan Achromatic		
1286ECM	Trinocular	Fluorescence	25X, 40X (Glycerin)	Achromatic	100W HBO Mercury	20W Variable Quartz Halogen
		Phase Contrast	10X, 25X, 40X, 100X (Oil)	Plan Achromatic		
		Brightfield	4X, 10X, 40X, 100X (Oil)	Plan Achromatic		



Industrial Microscopes

1200MM Series



- Research Level
- Reflected Transmitted Light Models
- Precision Optics

VanGuard 1200MM Series Industrial Microscopes featuring reflected illumination, as well as long working distance objectives, are perfect for the inspection of integrated circuits, wafers, electronic components, metals, polymers, paint, textiles, and essentially any other opaque sample.

Viewing Head. Trinocular (Seidentopf) heads rotate 360° and are inclined at 30°. Both models feature interpupillary and dioptic adjustment. The heads feature a sliding main prism (100/100 split) to provide either 100% of the image to the vertical tube, or 100% of the image to the eyepieces.

Eyepieces. 10X Widefield (DIN) with a field number of 18.

Nosepiece. Quadruple, reversed, ball-bearing nosepiece with high-grade lubricant and positive stops. The nosepiece is reversed (inward facing) to allow for easier manipulation of slides and to aid in keeping the objectives clean.

Objectives. Plan achromatic objectives come standard on both models. Objectives are made to DIN standards and are coated.

Stage. Delivering a high level of fluid motion control and longevity, the stage measures 185x140mm. Model 1242MM is fitted with a 77x98mm glass insert. Motion is controlled by a right-hand, low-position coaxial control and is driven by a rack and pinion system.

Focusing Movement. Coaxial, low-position coarse and fine focus controls feature a 40mm focusing range and are graduated to 2 microns per division. Fitted with tension adjustment and safety autostop.

Condenser. Model 1242MM comes with a 1.25 N.A. Abbe condenser mounted on a rack and pinion focusing mechanism and feature spring-loaded centering knobs and an iris diaphragm with a swing-in filter holder.

Upper (Reflected) Illumination System. Condenser, iris diaphragm; four-color filter wheel (yellow, green, blue, and neutral); polarizing filter.

Upper (Reflected) Illumination. 20W variable quartz halogen light source.

Lower (Transmitted) Illumination. Model 1242MM only. 20W variable quartz halogen light source. Comes with blue and neutral density filters. 0.5A, 250V fuse.

Base. Stable 180x210mm base fitted with anti-skid rubber feet.

Body. Cast-metal, ergonomic body with stain-resistant enamel finish.

Dimensions. 250mm (L) x 200mm (W) x 435mm (H); 8.6kg.



Model 1242MM



Specifications

Viewing Head:	Trinocular	
Viewing Head Type:	Seidentopf	
Head Rotation:	360°	
Head Inclination:	30°	
Sliding Prism:	100 / 100 Split	
Interpupillary Adjustment:	55-75mm	
Dioptic Adjustment:	-5 to +5	
Eyeiece Magnification:	10X Widefield	
Eyeiece Field Diameter:	18mm	
Optional Eyepieces:	15X (Field Diameter: 11mm) 20X (Field Diameter: 11mm)	
Nosepiece:	Quadruple / Reversed	
Brightfield Objectives: <i>(Plan Achromatic)</i>	4X	[0.10 N.A., 17.0mm W.D., 4.5mm F.O.V.]
	10X	[0.25 N.A., 8.0mm W.D., 1.8mm F.O.V.]
	25X	[0.40 N.A., 4.8mm W.D., 0.72mm F.O.V.]
	40X	[0.65 N.A., 3.3mm W.D., 0.45mm F.O.V.]
	100X	[1.25 N.A., 0.25mm W.D., 0.18mm F.O.V.] (Optional)
Stage Dimensions:	140mm x 185mm	
Stage Motion:	Right-Hand Coaxial Control / Rack & Pinion Drive	
Stage Movement Range:	30x70mm	
Stage Inserts:	Glass Insert [Model 1242MM]	
Focusing Movement:	Coaxial Coarse & Fine Controls / Safety Autostop	
Focusing Range:	40mm	
Focusing Graduation:	2 Microns Per Division	
Brightfield Condenser:	1.25 N.A. Abbe Condenser w/ Iris Diaphragm [Model 1242MM]	
Upper Illumination System:	Condenser, Iris Diaphragm (2), Four-Color Filter Wheel, Polarizing Filter	
Upper Illumination:	20W Variable Quartz Halogen	
Lower Illumination:	20W Variable Quartz Halogen [Model 1242MM]	
Fuse:	0.5A, 250V	
Voltage:	110V [Standard]; 220V [Special Order]	
Base Dimensions:	250mm x 200mm	
Overall Dimensions:	250mm (L) x 200mm (W) x 400mm (H)	
Weight:	8.6kg	
Supplied With:	20W Halogen Lamp (Spare) (cat. no. 1200-20WHL), 0.5A, 250V Fuse (Spare) (cat. no. 1200-FS1), Dust Cover, Operation Manual	



Model 1241MM

Ordering Information

Reflected Light Model

Model	Head	Type	Objective Magnification	Objective Type	Illumination
1241MM	Trinocular	Reflected	4X, 10X, 25X, & 40X	Plan Achromatic	20W Variable Quartz Halogen

Reflected / Transmitted Light Model

Model	Head	Type	Objective Magnification	Objective Type	Illumination
1242MM	Trinocular	Reflected / Transmitted	4X, 10X, 25X, & 40X	Plan Achromatic	20W Variable Quartz Halogen



Inverted Microscopes

1200CMI Series



- Research Level
- Rightfield Phase Contrast Models
- Precision Optics

VanGuard 1200CMI Series Inverted Microscopes are suited for observation of biological cultures or specimens within well plates, petri dishes, or vials.

Viewing Head. Trinocular (Seidentopf) heads rotate 360° and are inclined at 30°. Both models feature interpupillary and dioptic adjustment. The trinocular head features a sliding main prism (100/100 split) to provide either 100% of the image to the vertical tube, or 100% of the image to the eyepieces.

Eyepieces. 10X Widefield (DIN) with a field number of 18.

Nosepiece. Quadruple, ball-bearing nosepiece with high-grade lubricant and positive stops.

Objectives. Plan achromatic objectives come standard on both models. Objectives are made to DIN standards and are coated.

Stage. Delivering a high level of fluid motion control and longevity, the stage measures 150x200mm. Comes with two stage inserts: one for a standard 1x3" slide, and one for petri dishes or similar vials. Motion is controlled by a right-hand, low-position coaxial control and is driven by a rack and pinion system.

Focusing Movement. Coaxial, low-position coarse and fine focus controls feature a 40mm focusing range and are graduated to 2 microns per division. Fitted with tension adjustment and safety autostop.

Condenser. Brightfield models come with a 0.40 N.A. condenser. Phase contrast models come with a 0.40 N.A. Zernike condenser with phase annulus rings for 10X, 25X, & 40X; also has a "0" setting for brightfield work. All condensers are mounted on a rack and pinion focusing mechanism and feature spring-loaded centering knobs, an iris diaphragm, and a swing-in filter holder.

Illumination. 20W variable quartz halogen light source. Comes with blue, green (Model 1293CMI only), and neutral density filters. 0.5A, 250V fuse.

Base. Stable 330x205mm base fitted with anti-skid rubber feet.

Body. Cast-metal, ergonomic body with stain-resistant enamel finish.

Dimensions. 330mm (L) x 205mm (W) x 435mm (H); 9.7kg.



Model 1293CMI



Specifications

Viewing Head:	Trinocular	
Viewing Head Type:	Seidentopf	
Head Rotation:	360°	
Head Inclination:	30°	
Sliding Prism:	100 / 100 Split	
Interpupillary Adjustment:	55-75mm	
Dioptric Adjustment:	-5 to +5	
Eyepiece Magnification:	10X Widefield	
Eyepiece Field Diameter:	18mm	
Optional Eyepieces:	15X (Field Diameter: 11mm) 20X (Field Diameter: 11mm)	
Nosepiece:	Quadruple	
Brightfield Objectives: (Plan Achromatic)	4X	[0.10 N.A., 17.0mm W.D., 4.5mm F.O.V.] (Optional)
	10X	[0.25 N.A., 8.1mm W.D., 1.8mm F.O.V.]
	25X	[0.25 N.A., 8.1mm W.D., 1.8mm F.O.V.]
	40X	[0.65 N.A., 3.3mm W.D., 0.45mm F.O.V.]
Phase Contrast Objectives: (Plan Achromatic)	10X	[0.25 N.A., 8.1mm W.D., 1.8mm F.O.V.]
	25X	[0.25 N.A., 8.1mm W.D., 1.8mm F.O.V.]
	40X	[0.65 N.A., 3.3mm W.D., 0.45mm F.O.V.]
Stage Dimensions:	150mm x 200mm	
Stage Motion:	Right-Hand Coaxial Control / Rack & Pinion Drive	
Stage Movement Range:	30x70mm	
Sample Clearance (Brightfield):	75mm (Maximum)	
Sample Clearance (Phase):	40mm (Maximum)	
Stage Inserts:	Microscope Slide (1x3") Insert & Petri Dish/Vial Insert	
Focusing Movement:	Coaxial Coarse & Fine Controls / Safety Autostop	
Focusing Range:	40mm	
Focusing Graduation:	2 Microns Per Division	
Brightfield Condenser:	0.40 N.A. Condenser w/ Iris Diaphragm	
Phase Contrast Condenser:	0.40 N.A. Zernike Condenser w/ Iris Diaphragm	
Phase Centering Tool:	Telescoping Eyepiece [Model 1293CMI]	
Illumination:	20W Variable Quartz Halogen	
Fuse:	0.5A, 250V	
Voltage:	110V [Standard]; 220V [Special Order]	
Base Dimensions:	330mm x 205mm	
Overall Dimensions:	330mm (L) x 205mm (W) x 435mm (H)	
Weight:	9.7kg	
Supplied With:	20W Halogen Lamp (Spare) (cat. no. 1200-20WHL), 0.5A, 250V Fuse (Spare) (cat. no. 1200-FS1), Dust Cover, Operation Manual	



Model 1291CMI

Ordering Information

Brightfield Model

Model	Head	Type	Objective Magnification	Objective Type	Illumination
1291CMI	Trinocular	Brightfield	10X, 25X, 40X	Plan Achromatic	20W Variable Quartz Halogen

Phase Contrast Model

Model	Head	Type	Objective Magnification	Objective Type	Illumination
1293CMI	Trinocular	Phase Contrast	10X, 25X, 40X	Plan Achromatic	20W Variable Quartz Halogen



Stereo Microscopes

1200SH 1200S Series



- Research Level
- Dual Magnification
- Precision Optics

VanGuard 1200SH & 1200SF Series Stereo Microscopes feature models with 4 different dual-magnification configurations. The precision stereo optics produce high-resolution, three-dimensional images. Optional eyepieces are available to customize any model for specific magnification requirements.

Viewing Head. Binocular heads rotate 360° and are inclined at 45°. All models feature interpupillary and dioptic adjustment, a large field of view, and a 102mm working distance.

Eyepieces. 10X Widefield (DIN) with a field number of 20.

Stereo Optics. Dual-Magnification (1X & 2X, 1X & 3X, 2X & 4X, and 1X & 4X models available), revolving turret objectives, parfocal and parcentered.

Focusing Movement. Large, knurled knobs drive rack & pinion mechanism for easy, controlled focusing. Also features a slip clutch mechanism to protect the gears, tension control, and 65mm of total vertical travel.

Upper (Incident) Illumination. 15W variable quartz halogen light source.

Lower (Transmitted) Illumination. 15W variable quartz halogen light source on the 1200SH Series models; 5W cool fluorescent light source on the 1200SF Series models. 0.75A, 250V fuse.

Illumination Switch. 3-Way illumination switch on the 1200SF Series models allows the upper and lower illumination to be on separately or simultaneously.

Stage Plate. Frosted glass stage plate and black/white reversible stage plates come standard with all models.

Stage Clips. Locked-on, stainless-steel, spring-loaded stage clips.

Base. Stable 220x165mm base fitted with anti-skid rubber feet.

Body. Cast-metal, ergonomic body with stain-resistant enamel finish.

Dimensions. 220mm (L) x 165mm (W) x 360mm (H); 4.5kg.



Model 1252SH



Specifications

Viewing Head:	Binocular
Head Rotation:	360°
Head Inclination:	45°
Interpupillary Adjustment:	51-77mm
Dioptric Adjustment:	-5 to +5
Eyepiece Magnification:	10X Widefield
Eyepiece Field Diameter:	20mm
Optional Eyepieces:	15X (Field Diameter: 15mm) 20X (Field Diameter: 12mm)
Stereo Objectives:	1X & 2X [Models 1252SH & 1262SF] 1X & 3X [Models 1253SH & 1263SF] 2X & 4X [Models 1254SH & 1264SF] 1X & 4X [Models 1255SH & 1265SF]
Working Distance:	102mm
Stage Plate:	Frosted & Black/White Reversible
Stage Clips:	Stainless Steel, Spring-Loaded, Locked-On
Focusing Movement:	Dual Knobs; Rack & Pinion Assembly; Tension Control; Slip-Clutch Mechanism
Vertical Travel:	65mm
Upper Illumination:	15W Variable Quartz Halogen
Lower Illumination:	15W Variable Quartz Halogen [1200SH Models] 5W Fluorescent [1200SF Models]
Fuse:	0.75A, 250V
Voltage:	110V [Standard]; 220V [Special Order]
Base Dimensions:	220mm x 165mm
Overall Dimensions:	220mm (L) x 165mm (W) x 360mm (H)
Weight:	4.5kg
Supplied With:	15W Halogen Lamp (Spare) (cat. no. 1200-15WHL), 0.75A, 250V Fuse (Spare) (cat. no. 1200-FS3), Eyecup (2), Dust Cover, Operation Manual



Model 1253SH



Model 1254SH

Magnification Configurations

Eyepieces	Objective	Total Magnification	Field of View (mm)	Working Distance (mm)
10X	1X	10X	20.0	102
10X	2X	20X	10.0	102
10X	3X	30X	6.6	102
10X	4X	40X	5.0	102
15X	1X	15X	15.0	102
15X	2X	30X	7.5	102
15X	3X	45X	5.0	102
15X	4X	60X	3.8	102
20X	1X	20X	12.0	102
20X	2X	40X	6.0	102
20X	3X	60X	4.0	102
20X	4X	80X	3.0	102

Ordering Information

1200SH Models

Model	Head	Objectives	Upper Illumination	Lower Illumination
1252SH	Binocular	1X & 2X	15W Variable Quartz Halogen	15W Variable Quartz Halogen
1253SH	Binocular	1X & 3X	15W Variable Quartz Halogen	15W Variable Quartz Halogen
1254SH	Binocular	2X & 4X	15W Variable Quartz Halogen	15W Variable Quartz Halogen
1255SH	Binocular	1X & 4X	15W Variable Quartz Halogen	15W Variable Quartz Halogen

1200SF Models

Model	Head	Objectives	Upper Illumination	Lower Illumination
1262SF	Binocular	1X & 2X	15W Variable Quartz Halogen	5W Fluorescent
1263SF	Binocular	1X & 3X	15W Variable Quartz Halogen	5W Fluorescent
1264SF	Binocular	2X & 4X	15W Variable Quartz Halogen	5W Fluorescent
1265SF	Binocular	1X & 4X	15W Variable Quartz Halogen	5W Fluorescent



Stereo Microscopes

1200 1200 H Series



- Research Level
- Zoom Magnification 1
- Halogen Or Fluorescent Illumination
- Precision Optics

VanGuard 1200ZF & 1200ZH Series Stereo Microscopes feature a zoom magnification range of 7X to 45X (w/ 10X eyepieces). The precision stereo optics produce high-resolution, three-dimensional images. Choose from halogen or fluorescent transmitted illumination. Optional eyepieces and supplementary lenses are available to customize any model for specific magnification requirements.

Viewing Head. Binocular or trinocular heads rotate 360° and are inclined at 45°. All models feature interpupillary and dual diopter adjustment, a large field of view, and a 93mm working distance.

Eyepieces. 10X Widefield (DIN) with a field number of 20.

Zoom Optics. The 0.7X to 4.5X primary magnification produces a nominal total magnification range of 7X to 45X, when the 10X eyepieces are used. Features smooth-turning, dual, side-mounted zoom controls.

Pod Ring. Sturdy design with set screw and 85mm inside diameter.

Focusing Movement. Large, knurled knobs drive rack & pinion mechanism for easy, controlled focusing. Also features a slip clutch mechanism to protect the gears, tension control, and 85mm of total vertical travel.

Upper (Incident) Illumination. 15W variable quartz halogen reflector light source for maximum light.

Lower (Transmitted) Illumination. 15W variable quartz halogen light source on the 1200ZH Series models; 5W cool fluorescent light source on the 1200ZF Series models. 0.75A, 250V fuse.

Illumination Switch. 3-Way illumination switch on the 1200ZF Series models allows the upper and lower illumination to be on separately or simultaneously.

Stage Plate. Frosted glass stage plate and black/white reversible stage plates come standard with all models.

Stage Clips. Locked-on, stainless-steel, spring-loaded stage clips.

Base. Stable 255x180mm base fitted with anti-skid rubber feet.

Body. Cast-metal, ergonomic body with stain-resistant enamel finish.

Dimensions. 255mm (L) x 180mm (W) x 430mm (H); 7.7kg.



Model 1274ZH



Specifications

Viewing Head:	Binocular or Trinocular
Head Rotation:	360°
Head Inclination:	45°
Interpupillary Adjustment:	55-90mm
Dioptric Adjustment:	-5 to +5
Eyepiece Magnification:	10X Widefield
Eyepiece Field Number:	20mm
Optional Eyepieces:	15X (Field Diameter: 15mm) 20X (Field Diameter: 12mm)
Optional Supplementary Lenses:	0.5X, 1.0X, 1.5X, & 2.0X
Stereo Zoom Objectives:	0.7X to 4.5X
Working Distance:	93mm
Pod Ring I.D.:	85mm
Stage Plate:	Frosted & Black/White Reversible
Stage Clips:	Stainless Steel, Spring-Loaded, Locked-On
Focusing Movement:	Dual Knobs; Rack & Pinion Assembly; Tension Control; Slip-Clutch Mechanism
Vertical Travel:	85mm
Upper Illumination:	15W Variable Quartz Halogen
Lower Illumination:	15W Variable Quartz Halogen [1200ZH Models] 5W Fluorescent [1200ZF Models]
Fuse:	0.75A, 250V
Voltage:	110V [Standard]; 220V [Special Order]
Base Dimensions:	255mm x 180mm
Overall Dimensions:	255mm (L) x 180mm (W) x 430mm (H)
Weight:	7.7kg
Supplied With:	15W Halogen Lamp (Spare) (cat. no. 1200-15WHL), 0.75A, 250V Fuse (Spare) (cat. no. 1200-FS3), Eyecup (2), Dust Cover, Operation Manual



Model 1271ZF



Model 1273ZH

Magnification Configurations

Eyepieces	Supplementary Lens	Zoom Range	Field of View (mm)	Working Distance (mm)
10X	0.5X	3.5X to 22.5X	57.0 to 8.8	150
10X	1.0X / None	7X to 45X	28.5 to 4.4	93
10X	1.5X	10.5X to 67.5X	19.0 to 3.0	49
10X	2.0X	14X to 90X	14.2 to 2.2	34
15X	0.5X	5.25X to 33.75X	42.8 to 6.6	150
15X	1.0X / None	10.5X to 67.5X	22.0 to 3.4	93
15X	1.5X	15.75X to 101.25X	14.2 to 2.2	49
15X	2.0X	21X to 135X	11.0 to 1.7	34
20X	0.5X	7X to 45X	34.0 to 5.3	150
20X	1.0X / None	14X to 90X	17.0 to 2.6	93
20X	1.5X	21X to 135X	11.0 to 1.7	49
20X	2.0X	28X to 180X	8.5 to 1.3	34

Ordering Information

1200ZF Models

Model	Head	Zoom Range (Primary)	Upper Illumination	Lower Illumination
1271ZF	Binocular	0.7X to 4.5X	15W Variable Quartz Halogen	5W Fluorescent
1272ZF	Trinocular	0.7X to 4.5X	15W Variable Quartz Halogen	5W Fluorescent

1200ZH Models

Model	Head	Zoom Range (Primary)	Upper Illumination	Lower Illumination
1273ZH	Binocular	0.7X to 4.5X	15W Variable Quartz Halogen	15W Variable Quartz Halogen
1274ZH	Trinocular	0.7X to 4.5X	15W Variable Quartz Halogen	15W Variable Quartz Halogen



Stereo Microscopes

1200 1200 Series



- Research Level
- Zoom Magnification 1
- Pole Stand Or Boom Stand Bases
- Precision Optics

VanGuard 1200ZP & 1200ZB Series Stereo Microscopes feature a zoom magnification range of 7X to 45X (w/ 10X eyepieces). The precision stereo optics produce high-resolution, three-dimensional images. Choose from pole stand or boom stand bases. Optional eyepieces and supplementary lenses are available to customize any model for specific magnification requirements.

Viewing Head. Binocular or trinocular heads rotate 360° and are inclined at 45°. All models feature interpupillary and dual dioptic adjustment, a large field of view, and a 93mm working distance.

Eyepieces. 10X Widefield (DIN) with a field number of 20.

Zoom Optics. The 0.7X to 4.5X primary magnification produces a nominal total magnification range of 7X to 45X, when the 10X eyepieces are used. Features smooth-turning, dual, side-mounted zoom controls.

Pod Ring. Sturdy design with set screw and 85mm inside diameter.

Focusing Movement. Large, knurled knobs drive rack & pinion mechanism for easy, controlled focusing. Also features a slip clutch mechanism to protect the gears, tension control, and 85mm of total vertical travel.

Pole Stand. 1200ZP Series models feature a solid, stainless-steel pole (165mm length) with 100mm of vertical travel.

Boom Stand. 1200ZB Series models feature a durable boom stand allowing 415mm of horizontal travel and 300mm of vertical travel. Solid base requires no counterbalance.

Stage Plate. Black/white reversible stage plates come standard on the 1200ZP Series models.

Stage Clips. Locked-on, stainless-steel, spring-loaded stage clips.

Base (1200ZP). Stable 190x150mm base fitted with anti-skid rubber feet.

Base (1200ZB). Stable 260x240mm base fitted with anti-skid rubber feet.

Body. Cast-metal, ergonomic body with stain-resistant enamel finish.

Dimensions (1200ZP). 190mm (L) x 150mm (W) x 430mm (H); 5.6kg.

Dimensions (1200ZB). 815mm (L) x 240mm (W) x 420mm (H); 11.2kg.



Model 1275ZP



Specifications

Viewing Head:	Binocular or Trinocular
Head Rotation:	360°
Head Inclination:	45°
Interpupillary Adjustment:	55-90mm
Dioptric Adjustment:	-5 to +5
Eyepiece Magnification:	10X Widefield
Eyepiece Field Number:	20mm
Optional Eyepieces:	15X (Field Diameter: 15mm) 20X (Field Diameter: 12mm)
Optional Supplementary Lenses:	0.5X, 1.0X, 1.5X, & 2.0X
Stereo Zoom Objectives:	0.7X to 4.5X
Working Distance:	93mm
Pod Ring I.D.:	85mm
Stage Plate:	Black/White Reversible [1200ZP Models]
Stage Clips:	Stainless Steel, Spring-Loaded, Locked-On [1200ZP Models]
Focusing Movement:	Dual Knobs; Rack & Pinion Assembly; Tension Control; Slip-Clutch Mechanism
Vertical Travel:	85mm
Upper Illumination:	None
Lower Illumination:	None
Horizontal Base Pole:	500mm Length; 415mm Travel [1200ZB Models]
Vertical Base Pole:	165mm Length; 100mm Travel [1200ZP Models] 390mm Length; 300mm Travel [1200ZB Models]
Base Dimensions:	190mm x 150mm [1200ZP Models] 240mm x 260mm [1200ZB Models]
Overall Dimensions:	190mm (L) x 150mm (W) x 430mm (H) [1200ZP Models] 815mm (L) x 240mm (W) x 420mm (H) [1200ZB Models]
Weight:	5.6kg [1200ZP Models] 11.5kg [1200ZB Models]
Supplied With:	Eyecup (2), Dust Cover, Operation Manual



Model 1277ZB

Magnification Configurations

Eyepieces	Supplementary Lens	Zoom Range	Field of View (mm)	Working Distance (mm)
10X	0.5X	3.5X to 22.5X	57.0 to 8.8	150
10X	1.0X / None	7X to 45X	28.5 to 4.4	93
10X	1.5X	10.5X to 67.5X	19.0 to 3.0	49
10X	2.0X	14X to 90X	14.2 to 2.2	34
15X	0.5X	5.25X to 33.75X	42.8 to 6.6	150
15X	1.0X / None	10.5X to 67.5X	22.0 to 3.4	93
15X	1.5X	15.75X to 101.25X	14.2 to 2.2	49
15X	2.0X	21X to 135X	11.0 to 1.7	34
20X	0.5X	7X to 45X	34.0 to 5.3	150
20X	1.0X / None	14X to 90X	17.0 to 2.6	93
20X	1.5X	21X to 135X	11.0 to 1.7	49
20X	2.0X	28X to 180X	8.5 to 1.3	34

Ordering Information

1200ZP Models

Model	Head	Zoom Range (Primary)	Upper Illumination	Lower Illumination
1275ZP	Binocular	0.7X to 4.5X	None	None
1276ZP	Trinocular	0.7X to 4.5X	None	None

1200ZB Models

Model	Head	Zoom Range (Primary)	Upper Illumination	Lower Illumination
1277ZB	Binocular	0.7X to 4.5X	None	None
1278ZB	Trinocular	0.7X to 4.5X	None	None



Stereo Microscopes

1100 H 1100 Series



- Intermediate Level
- Zoom Magnification 1
- Halogen Or Fluorescent Illumination
- Precision Optics

VanGuard 1100ZF & 1100ZH Series Stereo Microscopes feature a zoom magnification range of 7.5X to 34X (w/ 10X Eyepieces). The precision stereo optics produce high-resolution, three-dimensional images. Choose from halogen or fluorescent transmitted illumination. Optional eyepieces are available to customize any model for specific magnification requirements.

Viewing Head. Binocular or trinocular heads are inclined at 45°. All models feature interpupillary and dual dioptic adjustment, a large field of view, and a 90mm working distance.

Eyepieces. 10X Widefield (DIN) with a field number of 20.

Zoom Optics. The 0.75X to 3.4X primary magnification produces a nominal total magnification range of 7.5X to 34X, when the 10X eyepieces are used. Features smooth-turning, dual, side-mounted zoom controls.

Focusing Movement. Large, knurled knobs drive rack & pinion mechanism for easy, controlled focusing. Also features a slip clutch mechanism to protect the gears, tension control, and 85mm of total vertical travel.

Upper (Incident) Illumination. 15W variable quartz halogen reflector light source for maximum light.

Lower (Transmitted) Illumination. 15W variable quartz halogen light source on the 1100ZH Series models; 5W cool fluorescent light source on the 1100ZF Series models. 0.75A, 250V fuse.

Illumination Switch. 3-Way illumination switch on the 1100ZF Series models allows the upper and lower illumination to be on separately or simultaneously.

Stage Plate. Frosted glass stage plate and black/white reversible stage plates come standard with all models.

Stage Clips. Locked-on, stainless-steel, spring-loaded stage clips.

Base. Stable 215x155mm base fitted with anti-skid rubber feet.

Body. Cast-metal, ergonomic body with stain-resistant enamel finish.

Dimensions. 215mm (L) x 155mm (W) x 380mm (H); 4.3kg.



Model 1133ZH



Specifications

Viewing Head:	Binocular or Trinocular
Head Rotation:	Fixed
Head Inclination:	45°
Interpupillary Adjustment:	55-90mm
Dioptric Adjustment:	-5 to +5
Eyepiece Magnification:	10X Widefield
Eyepiece Field Number:	20mm
Optional Eyepieces:	15X (Field Diameter: 15mm) 20X (Field Diameter: 12mm)
Stereo Zoom Objectives:	0.75X to 3.4X
Working Distance:	90mm
Stage Plate:	Frosted & Black/White Reversible
Stage Clips:	Stainless Steel, Spring-Loaded, Locked-On
Focusing Movement:	Dual Knobs; Rack & Pinion Assembly; Tension Control; Slip-Clutch Mechanism
Vertical Travel:	85mm
Upper Illumination:	15W Variable Quartz Halogen
Lower Illumination:	15W Variable Quartz Halogen [1100ZH Models] 5W Fluorescent [1100ZF Models]
Fuse:	0.75A, 250V
Voltage:	110V [Standard]; 220V [Special Order]
Base Dimensions:	215mm x 155mm
Overall Dimensions:	215mm (L) x 155mm (W) x 380mm (H)
Weight:	4.3kg
Supplied With:	15W Halogen Lamp (Spare) (cat. no. 1200-15WHL), 0.75A, 250V Fuse (Spare) (cat. no. 1200-FS3), Eyecup (2), Dust Cover, Operation Manual



Model 1131ZF

Magnification Configurations

Eyepieces	Supplementary Lens	Zoom Range	Field of View (mm)	Working Distance (mm)
10X	0.5X	3.75X to 17X	52.0 to 11.6	140
10X	1.0X / None	7.5X to 34X	26.0 to 5.8	90
10X	1.5X	11.25X to 51X	17.7 to 3.9	48
10X	2.0X	15X to 68X	13.0 to 2.9	34
15X	0.5X	5.6X to 25.5X	40.0 to 8.8	140
15X	1.0X / None	11.25X to 51X	20.0 to 4.4	90
15X	1.5X	16.8X to 76.5X	13.3 to 2.9	48
15X	2.0X	22.5X to 102X	10.0 to 2.2	34
20X	0.5X	7.5X to 34X	32.7 to 7.0	140
20X	1.0X / None	15X to 68X	16.0 to 3.5	90
20X	1.5X	22.5X to 102X	10.6 to 2.4	48
20X	2.0X	30X to 136X	8.0 to 1.8	34

Ordering Information

1100ZF Models

Model	Head	Zoom Range (Primary)	Upper Illumination	Lower Illumination
1131ZF	Binocular	0.75X to 3.4X	15W Variable Quartz Halogen	5W Fluorescent
1132ZF	Trinocular	0.75X to 3.4X	15W Variable Quartz Halogen	5W Fluorescent

1100ZH Models

Model	Head	Zoom Range (Primary)	Upper Illumination	Lower Illumination
1133ZH	Binocular	0.75X to 3.4X	15W Variable Quartz Halogen	15W Variable Quartz Halogen
1134ZH	Trinocular	0.75X to 3.4X	15W Variable Quartz Halogen	15W Variable Quartz Halogen



Stereo Microscopes

1100S Series

- Intermediate Level
- Dual Magnification
- Precision Optics

VanGuard 1100SP Series Stereo Microscopes feature models with 4 different dual-magnification configurations. The precision stereo optics produce high-resolution, three-dimensional images. Optional eyepieces are available to customize any model for specific magnification requirements.

Viewing Head. Binocular heads rotate 360° and are inclined at 45°. All models feature interpupillary and dioptic adjustment, a large field of view, and a 102mm working distance.

Eyepieces. 10X Widefield (DIN) with a field number of 20.

Stereo Optics. Dual-Magnification (1X & 2X, 1X & 3X, 2X & 4X, and 1X & 4X models available), revolving turret objectives, parfocal and parcentered.

Focusing Movement. Large, knurled knobs drive rack & pinion mechanism for easy, controlled focusing. Also features a slip clutch mechanism to protect the gears, tension control, and 65mm of total vertical travel.

Stage Plate. Black/white reversible stage plates come standard with all models.

Stage Clips. Locked-on, stainless-steel, spring-loaded stage clips.

Base. Stable 220x165mm base fitted with anti-skid rubber feet.

Body. Cast-metal, ergonomic body with stain-resistant enamel finish.

Dimensions. 220mm (L) x 165mm (W) x 360mm (H); 4.5kg.



Model 1122SP



Specifications

Viewing Head:	Binocular
Head Rotation:	360°
Head Inclination:	45°
Interpupillary Adjustment:	51-77mm
Dioptric Adjustment:	-5 to +5
Eyepiece Magnification:	10X Widefield
Eyepiece Field Diameter:	20mm
Optional Eyepieces:	15X (Field Diameter: 15mm) 20X (Field Diameter: 12mm)
Stereo Objectives:	1X & 2X [Model 1122SP] 1X & 3X [Model 1123SP] 2X & 4X [Model 1124SP] 1X & 4X [Model 1125SP]
Working Distance:	102mm
Stage Plate:	Black/White Reversible
Stage Clips:	Stainless Steel, Spring-Loaded, Locked-On
Focusing Movement:	Dual Knobs; Rack & Pinion Assembly; Tension Control; Slip-Clutch Mechanism
Vertical Travel:	65mm
Vertical Clearance:	65mm to 175mm
Upper Illumination:	None
Lower Illumination:	None
Base Dimensions:	230mm x 150mm
Overall Dimensions:	230mm (L) x 150mm (W) x 390mm (H)
Weight:	2.9kg
Supplied With:	Eyecup (2), Dust Cover, Operation Manual



Model 1123SP



Model 1124SP

Magnification Configurations

Eyepieces	Objective	Total Magnification	Field of View (mm)	Working Distance (mm)
10X	1X	10X	20.0	102
10X	2X	20X	10.0	102
10X	3X	30X	6.6	102
10X	4X	40X	5.0	102
15X	1X	15X	15.0	102
15X	2X	30X	7.5	102
15X	3X	45X	5.0	102
15X	4X	60X	3.8	102
20X	1X	20X	12.0	102
20X	2X	40X	6.0	102
20X	3X	60X	4.0	102
20X	4X	80X	3.0	102

Ordering Information

Model	Head	Objectives	Upper Illumination	Lower Illumination
1122SP	Binocular	1X & 2X	None	None
1123SP	Binocular	1X & 3X	None	None
1124SP	Binocular	2X & 4X	None	None
1125SP	Binocular	1X & 4X	None	None



INFINITE ♦ SOLUTIONS

VIOS
Infinity Optics

1300 Series Clinical Microscopes



High-Eyepoint Eyepieces (FD 20mm)



VIOS Infinity-Corrected Optics



Advanced Ergonomics



Integrated Koehler Illumination



VAN GUARD 1300 Series Clinical Microscopes

The vivid, infinity-corrected optics of the VanGuard 1300 Series Clinical Microscopes offer exceptionally high optical flatness and visual clarity. Ultra-low focusing controls and advanced ergonomics make them an excellent match for use in medical/veterinary clinics, universities, and industrial laboratories.

Wide ranges of models are available in Brightfield & Phase Contrast configurations. Choose from standard achromatic or plan achromatic objectives; monocular, binocular, or trinocular viewing heads.

Various camera packages are available as options; including digital, video, and 35mm systems.

All models feature 10X High-Eyepoint WideField eyepieces, 20W variable quartz halogen illumination, field diaphragms for Koehler illumination, and are backed by a 5-Year warranty.

VAN GUARD Technical Specifications

Optical System	VIOS Infinity-Corrected**
Viewing Head	Monocular, Binocular (Seidentopf), or Trinocular (Seidentopf); 30° Inclination; 360° Rotatable; 55-75mm Interpupillary; -6 to +6 Dioptic
Camera Port	20/80 Split
Eyepieces	10X WideField; 20mm F.D.; High-Eyepoint; Rubber Eyecups
Nosepiece	4-Position; Reverse Pitch
Objectives	Achromatic, Plan Achromatic, or Phase Contrast; 4X(0.10 N.A.), 10X(0.25 N.A.), 20X(0.40 N.A.), 40X(0.65 N.A.), 100X(1.25 N.A.); DIN Standard
Stage	Rectangular 140x130mm Mechanical; Drop-Down, Right-Hand, Rack & Pinion X-Y Control, 75 x 50mm Cross Travel Range; Removable Spring-Clip Slide Holder; Chemical-Resistant Finish
Focusing	Coaxial, Ultra-Low Position, Coarse/Fine Controls; Tension Adjustment; Safety Auto-Stop; 20mm Focusing Range; 0.002mm Precision
Condenser	1.25 N.A. Abbe; Iris Diaphragm; Rack & Pinion Focusing Control; 10X/20X, 40X, 100X Zernike Phase Stops (Phase Models); Telescoping Eyepiece For Phase Annuli Centering (Phase Models); Darkfield Stop (Phase Models)
Illumination	20W Variable Quartz Halogen; Centerable Field Diaphragms For Koehler; Filter Holder On Collector; Removable Collector For Simple Lamp Replacement
Base	225 x 175mm; Anti-Skid Rubber Feet
Body	Ergonomic; Stain-Resistant Enamel Finish
Voltage	110V (220V Available On Request)
Warranty	5-Year Optical/Mechanical; 1-Year Electrical
Supplied With	Spare Lamps & Fuses, Dust Cover, Operation Manual

**Excludes Models 1310BR, 1320BR, & 1330BR

VAN GUARD Ordering Information

Model	Head	Objective Magnification	Objective Type	Infinity Optics	Brightfield	Phase Contrast	Darkfield	Koehler	Illumination	Dimensions	Weight
1310BR	Monocular	4X, 10X, 40X, 100X	Achromatic	×	✓	×	×	✓	20W Variable Quartz Halogen	370 x 190 x 400mm	6.0kg
1320BR	Binocular	4X, 10X, 40X, 100X	Achromatic	×	✓	×	×	✓	20W Variable Quartz Halogen	370 x 190 x 400mm	6.0kg
1330BR	Trinocular	4X, 10X, 40X, 100X	Achromatic	×	✓	×	×	✓	20W Variable Quartz Halogen	370 x 190 x 400mm	6.2kg
1311BRi	Monocular	4X, 10X, 40X, 100X	Plan Achromatic	✓	✓	×	×	✓	20W Variable Quartz Halogen	370 x 190 x 400mm	6.5kg
1321BRi	Binocular	4X, 10X, 40X, 100X	Plan Achromatic	✓	✓	×	×	✓	20W Variable Quartz Halogen	370 x 190 x 400mm	6.5kg
1331BRi	Trinocular	4X, 10X, 40X, 100X	Plan Achromatic	✓	✓	×	×	✓	20W Variable Quartz Halogen	370 x 190 x 400mm	6.7kg
1313PHi	Monocular	10X, 20X, 40X, 100X	Plan Achromatic	✓	✓	✓	✓	✓	20W Variable Quartz Halogen	370 x 190 x 400mm	6.8kg
1323PHi	Binocular	10X, 20X, 40X, 100X	Plan Achromatic	✓	✓	✓	✓	✓	20W Variable Quartz Halogen	370 x 190 x 400mm	6.8kg
1333PHi	Trinocular	10X, 20X, 40X, 100X	Plan Achromatic	✓	✓	✓	✓	✓	20W Variable Quartz Halogen	370 x 190 x 400mm	7.0kg



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Camera Systems

- Digital CCD Video mm S stems
- High resolution Camera
- Document Displa Microscop Images

VanGuard Camera Systems are the perfect complement for documenting and displaying microscopy images. Choose the CCD Video or Video Eyepiece System for on-screen analysis. The 35mm and Digital Systems are the best choices for hard copy and high-resolution computer archiving, respectively.

mm S stems



Camera Specifications	
Type:	Multi-Exposure Mode 35mm SLR
Format:	24x36mm
Usable Film:	35mm Perforated Cartridge Film
Exposure Modes:	Programmed AE Mode, Shutter-Priority AE Mode, Aperture-Priority AE Mode, Metered Manual Mode, Bulb Mode
Shutter:	Electronically Controlled Vertical-Run Focal Plane Shutter
Viewfinder:	Matte Field And Spirit-Image Spot With Microprism Collar Focusing Screen
Self Timer:	Electronically Controlled With 12 Sec. Delay Time
Mirror:	Quick-Return Mirror
Exposure Meter:	Center-Weighted Metering
Exposure Compensation:	+/- 3EV In 0.5EV Step Increments
Power Source:	(2) 3V Lithium Battery (Type CR2)
Dimensions:	55.0mm (L) x 135.0mm (W) x 90.5mm (H)
Weight:	305g (w/o Batteries)

Cat. No.	Description	System Contents	For Series Models
1400-CPK	35mm Camera System	Camera Body, T-Adapter, Photo Adapter, 4X Lens, Shutter Release Cable, Photo Battery - CR2 (2 ea.)	Trinocular 1400BR, 1400PH, 1400FL
1400-CPKNC	35mm Adapters	NO Camera Body, T-Adapter (Specify Camera), 4X Lens	Trinocular 1400BR, 1400PH, 1400FL
1200-CPK	35mm Camera System	Camera Body, T-Adapter, 2.5X/4X Lens Assembly, Shutter Release Cable, Photo Battery - CR2 (2 ea.)	Trinocular 1200CM, 1200MM, 1200CMI, 1200ECM
1200-CPKNC	35mm Adapters	NO Camera Body, T-Adapter (Specify Camera), 2.5X/4X Lens Assembly	Trinocular 1200CM, 1200MM, 1200CMI, 1200ECM
1200-ZPK	35mm Camera System	Camera Body, T-Adapter, Photo Adapter, 2.5X Lens, Tube Adapter, Shutter Release Cable, Photo Battery - CR2 (2 ea.)	1272ZF, 1274ZH, 1276ZP, 1278ZB, 1132ZF, 1134ZH
1200-ZPKNC	35mm Adapters	NO Camera Body, T-Adapter (Specify Camera), 2.5X Lens, Tube Adapter	1272ZF, 1274ZH, 1276ZP, 1278ZB, 1132ZF, 1134ZH
1200-ECPK	35mm Camera System	Camera Body, T-Adapter, Photo Adapter, 2.5X Lens, Shutter Release Cable, Photo Battery - CR2 (2 ea.)	1115AMH
1200-ECPKNC	35mm Adapters	NO Camera Body, T-Adapter (Specify Camera), 2.5X Lens	1115AMH

Video eyepiece S stems



Camera Specifications	
TV System:	NTSC (Composite Output)
Pick-Up Device:	1/3" CCD Sensor
Picture Elements:	620 (H) x 580 (V)
Scanning Area:	3.54mm x 4.69mm
Scanning System:	525 Lines / 60Hz -- 2:1 Interlace
Scanning Frequency:	15KHz x 60Hz
Horizontal Resolution:	420 TV Lines
Minimum Sensitivity:	5 lux On CCD Surface
S/N Ratio:	48dB
White Balance:	Electronic Push-Button
Gain Control:	Automatic
Power Source:	12V DC
Dimensions:	125.0mm (L) x 30mm Diameter
Weight:	205g

Cat. No.	Description	System Contents	For Series Models
1200-VEK	Video Eyepiece System	Camera, 0.4X Reduction Lens, 23mm Adapter, 30mm Adapter, Power Supply, RCA Video Cable	All Compound Models
1200-CVEK	Video Eyepiece System	Camera, 0.4X Reduction Lens, 23mm Adapter, 30mm Adapter, Tube Adapter, Power Supply, RCA Video Cable	Trinocular 1200CM, 1200MM, 1200CMI, 1200ECM
1200-ZVEK	Video Eyepiece System	Camera, 0.4X Reduction Lens, 23mm Adapter, 30mm Adapter, Tube Adapter, Power Supply, RCA Video Cable	1200Z, 1200SH, 1200SF, 1100Z



CCD Video S stems



Model 1400-CVK



Model 1200-CVK



Model 1200-ZVK

Camera Specifications

TV System:	NTSC (PAL Available)
Pick-Up Device:	1/2" CCD Sensor
Picture Elements:	768 (H) x 494 (V) [NTSC] 752 (H) x 582 (V) [PAL]
Lens Mount:	CS-Mount
AGC:	0dB ~ 18dB
Shutter:	1/60 (1/50) ~ 1/10.000
Horizontal Resolution:	450 TV Lines
S/N Ratio:	50 dB
White Balance:	3200°K / 4600°K / 5600°K / ATW
Video Output:	VBS
Minimum Sensitivity:	0.3 lux On CCD Surface (AGC On)
External Sync.:	HD/VD, Composite Sync.
Power Source:	12V DC
Dimensions:	128.0mm (L) x 51.0mm (W) x 43.0mm (H)
Weight:	380g

Cat. No.	Video	Voltage	System Contents	For Series Models
1400-CVK	NTSC	110	Camera Body, 0.4X Reduction Lens, Power Supply, RCA to BNC Cable, S-Video Cable	Trinocular 1400BR, 1400PH, 1400FL, 1100AMH
1400-CVK-220	NTSC	220	Camera Body, 0.4X Reduction Lens, Power Supply, RCA to BNC Cable, S-Video Cable	Trinocular 1400BR, 1400PH, 1400FL, 1100AMH
1400-CVKP	PAL	110	Camera Body, 0.4X Reduction Lens, Power Supply, RCA to BNC Cable, S-Video Cable	Trinocular 1400BR, 1400PH, 1400FL, 1100AMH
1400-CVKP-220	PAL	220	Camera Body, 0.4X Reduction Lens, Power Supply, RCA to BNC Cable, S-Video Cable	Trinocular 1400BR, 1400PH, 1400FL, 1100AMH
1200-CVK	NTSC	110	Camera Body, 0.4X Reduction Lens, Power Supply, RCA to BNC Cable, S-Video Cable	Trinocular 1200CM, 1200MM, 1200CMI, 1200ECM
1200-CVK-220	NTSC	220	Camera Body, 0.4X Reduction Lens, Power Supply, RCA to BNC Cable, S-Video Cable	Trinocular 1200CM, 1200MM, 1200CMI, 1200ECM
1200-CVKP	PAL	110	Camera Body, 0.4X Reduction Lens, Power Supply, RCA to BNC Cable, S-Video Cable	Trinocular 1200CM, 1200MM, 1200CMI, 1200ECM
1200-CVKP-220	PAL	220	Camera Body, 0.4X Reduction Lens, Power Supply, RCA to BNC Cable, S-Video Cable	Trinocular 1200CM, 1200MM, 1200CMI, 1200ECM
1200-ZVK	NTSC	110	Camera Body, 0.5X Reduction Lens, Power Supply, RCA to BNC Cable, S-Video Cable	1272ZF, 1274ZH, 1276ZP, 1278ZB, 1132ZF, 1134ZH
1200-ZVK-220	NTSC	220	Camera Body, 0.5X Reduction Lens, Power Supply, RCA to BNC Cable, S-Video Cable	1272ZF, 1274ZH, 1276ZP, 1278ZB, 1132ZF, 1134ZH
1200-ZVKP	PAL	110	Camera Body, 0.5X Reduction Lens, Power Supply, RCA to BNC Cable, S-Video Cable	1272ZF, 1274ZH, 1276ZP, 1278ZB, 1132ZF, 1134ZH
1200-ZVKP-220	PAL	220	Camera Body, 0.5X Reduction Lens, Power Supply, RCA to BNC Cable, S-Video Cable	1272ZF, 1274ZH, 1276ZP, 1278ZB, 1132ZF, 1134ZH

Digital S stems



Model 1400-CDCK
(Shown w/ 23mm Adapter)



Model 1400-CDCK
(Shown w/ 30mm Adapter)



Model 1200-CCDCK



Model 1200-ZCDCK

Camera Specifications

Pick-Up Device:	0.56" High Density CCD; 3.34 MegaPixels
Images Size:	Selectable From: 2,048 x 1,536 Pixels, XGA (1,024 x 768 Pixels), VGA (640 x 480 Pixels), and 3.2 (2,048 x 1,360 Pixels)
Shooting Distance:	30cm to Infinity
Optical Viewfinder:	Real-Image Zoom Viewfinder with LED Indication
LCD Monitor:	1.8", 110,000 Dot TFT LCD
Storage:	System: Digitally Stored (Uncompressed TIFF or Uncompressed JPEG); Media: CompactFlash (CF) Card
Shooting Modes:	Fully Automatic ([A]-REC) Mode; Custom ([M]-REC) Mode
Capture Modes:	Single, Continuous, Multi-Shot 16 (16 Frames 1/16 in size); VGA Sequence; Ultra High-Speed Continuous (Up to 80 QVGA images at ~30fps); Movie (Up to 40 Sec. of QVGA Size Frames at 15fps)
Shutter:	Mechanical and Charge-Coupled Electronic Shutter; Speed: 8 to 1/1000 Sec.
Aperture:	Seven-Blad Iris Diaphragm
Sensitivity:	ISO Equivalent 100, 200, 400, Auto
White Balance:	Matrix Auto White Balance With TTL Control
Interface:	USB or Serial
Video Output:	NTSC or PAL (Selectable)
IO Terminals:	Power Input, Video Output, Digital Output Terminal (USB or Serial)
Auto-Off Mode:	30 Sec.; Manual (1/5/30 Min.)
Power Requirements:	Four 1.5V LR6 (Alkaline "AA") Batteries or AC Adapter
Dimensions:	79.0mm (L) x 149.0mm (W) x 38.0mm (H)
Weight:	390g (w/o Batteries)

Cat. No.	Description	System Contents	For Series Models
1400-CDCK	Digital Camera System	Camera Body, 0.4X Reduction Lens (w/ 23mm & 30mm Adapters), Power Supply, USB Cable, RCA Video Output Cable, 16MB FlashCard, Software (Windows & Mac)	Trinocular 1400BR, 1400PH, 1400FL, 1115AMH
1400-CNC	Digital Camera Adapters	NO Camera Body, 0.4X Reduction Lens (w/ 23mm & 30mm Adapters)	Trinocular 1400BR, 1400PH, 1400FL, 1115AMH
1200-CCDCK	Digital Camera System	Camera Body, 0.4X Reduction Lens (w/ 23mm & 30mm Adapters), Tube Adapter, Power Supply, USB Cable, RCA Video Output Cable, 16MB FlashCard, Software (Windows & Mac)	Trinocular 1200CM, 1200MM, 1200CMI, 1200ECM
1200-CCNC	Digital Camera Adapters	NO Camera Body, 0.4X Reduction Lens (w/ 23mm & 30mm Adapters), Tube Adapter	Trinocular 1200CM, 1200MM, 1200CMI, 1200ECM
1200-ZCDCK	Digital Camera System	Camera Body, 0.4X Reduction Lens (w/ 23mm & 30mm Adapters), Tube Adapter, Power Supply, USB Cable, RCA Video Output Cable, 16MB FlashCard, Software (Windows & Mac)	1272ZF, 1274ZH, 1276ZP, 1278ZB, 1132ZF, 1134ZH
1200-ZCNC	Digital Camera Adapters	NO Camera Body, 0.4X Reduction Lens (w/ 23mm & 30mm Adapters), Tube Adapter	1272ZF, 1274ZH, 1276ZP, 1278ZB, 1132ZF, 1134ZH



Fiber Optic Lighting

1200 L1 0 1200 L 20 Models



- High Intensity Cool Illumination
- Ultra Low Housing Vibration Noise
- Light Guide Options for Variable Positioning

VanGuard Fiber Optic Light Sources provide efficient heat-free fiber optic lighting for microscopes and other heat-sensitive applications. Fiber optic ring lights & dual and single gooseneck light guides allow for precise positioning for any lighting application.

Model 1200-L150. Capable of operating at 120%, Model 1200-L150 can output light at 180W for those applications where extreme lighting is required (the red zone on the dial indicates when bulb life is being sacrificed for intensity). Its low-profile design fits into tight places; units can also be stacked for multiple light source applications. The rheostat provides smooth intensity control; a separate ON/OFF switch allows the user to maintain the light setting when the unit is powered off. Also features electrical and thermal protection, without having to replace any fuses -- the push of a button resets the power in the event of an electrical or thermal overload. Single and bifurcated gooseneck light guides, as well as fiber optic ring lights, are available.

Lamp Specifications:

Rheostat Setting	Light Output	EKE Lamp		EJV Lamp	
		Lamp Life	Color	Lamp Life	Color
0.2	20%	--	2720K	--	2870K
0.3	30%	--	2795K	--	2945K
0.4	40%	7000 Hr.	2970K	1400 Hr.	3120K
0.5	50%	2800 Hr.	3030K	560 Hr.	3180K
0.6	60%	1400 Hr.	3080K	280 Hr.	3240K
0.7	70%	800 Hr.	3130K	160 Hr.	3280K
0.8	80%	480 Hr.	3160K	96 Hr.	3310K
0.9	90%	280 Hr.	3210K	56 Hr.	3360K
1.0	100%	200 Hr.	3250K	40 Hr.	3400K
1.2	120%	80 Hr.	3370K	16 Hr.	3520K

Voltage: 110V [Standard]; 220V [Special Order]
Lamp Type: 150W Halogen (EKE) [Standard] (1200-LEKE)
 150W Halogen (EJV) [Optional] (1200-LEJV)
Dimensions: 210mm (L) x 185mm (W) x 90mm (H); 3.7kg

Model 1200-L20. Featuring 20W of fiber optic illumination, Model 1200-L20's heavy-duty, all-metal, convection-cooled design is ideal for equipment lighting where vibration or noise is a consideration. Model 1200-L20 is a high-value/low-cost addition to most microscopes and allows topographical viewing of samples that cannot be trans-illuminated. Features a 20W long-life halogen bulb. Single and bifurcated gooseneck light guides are available.

Voltage: 110V [Standard]; 220V [Special Order]
Lamp Type: 20W Halogen (1200-LL20)
Lamp Life: 2000 Hrs.
Color Temperature: 3100K
Dimensions: 65mm (L) x 155mm (W) x 65mm (H); 1.2kg



Model 1200-L150



Model 1200-L20



Light Guides

Annular Ring Light (Cat. No. 1200-RL36).

Featuring the highest degree of uniform illumination of the specimen, the annular ring light provides cool, shadow-free light with smooth, even coverage. Designed specifically for stereo microscopes. Flexible 36" stainless-steel sheathing. Fits Model 1200-L150.



Single Light Guide (Cat. No. 1200-SG18A).

The single light guide provides cool, electronically isolated, white light. The vinyl-clad sheathing provides obedient positioning. Overall length is 18". Fits Model 1200-L150.



Bifurcated Light Guide (Cat. No. 1200-BG18A).

Dual light guide permits two-station illumination and inspection of samples with a high degree of multi-dimensional clarity. The vinyl-clad sheathing provides obedient positioning. Overall length is 18". Fits Model 1200-L150.



Single Light Guide (Cat. No. 1200-SG18B).

The single light guide provides cool, electronically isolated, white light. The stainless-steel sheathing provides obedient positioning. Overall length is 18". Fits Model 1200-L20.



Bifurcated Light Guide (Cat. No. 1200-BG18B).

Dual light guide permits two-station illumination and inspection of samples with a high degree of multi-dimensional clarity. The stainless-steel sheathing provides accurate positioning. Overall length is 18". Fits Model 1200-L20.



Ordering Information

Light Sources

Model	Type	Light Guide Options
1200-L150	150W Fiber Optic Light Source, Variable Illumination	1200-RL36, 1200-BG18A, 1200-SG18A
1200-L20	20W Fiber Optic Light Source	1200-BG18B, 1200-SB18B

Light Guides

Model	Type	Length	For Light Source Model
1200-RL36	Ring Light	36"	1200-L150
1200-BG18A	Bifurcated	18"	1200-L150
1200-SG18A	Single	18"	1200-L150
1200-BG18B	Bifurcated	18"	1200-L20
1200-SG18B	Single	18"	1200-L20
1200-LGFL	Focusing Lens	N/A	Single & Bifurcated Light Guides



Reticles & Micrometers

VanGuard Eyepiece Reticles are an essential addition to microscopes for measuring, counting, or positioning. All reticles come installed in a 10X, 15X, or 20X eyepiece. VanGuard Stage Micrometers (calibration plates) are slide-mounted scales used to calibrate eyepiece reticles for measurement.

Scale Reticles

5mm, 100 Divisions (0.05mm)

Cat. No.	Reticle Description	Reticle Diameter	Eyepiece	Eyepiece F.O.V.	For Series Models
1400-RSM5C10C	5mm, 100 Divisions (0.05mm)	21mm	10X	18mm	1400BR, 1400PH, 1400FL
1400-RSM5C15C	5mm, 100 Divisions (0.05mm)	21mm	15X	13mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1400-RSM5C20C	5mm, 100 Divisions (0.05mm)	21mm	20X	9.5mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1200-RSM5C10C	5mm, 100 Divisions (0.05mm)	19mm	10X	18mm	1200CM, 1200MM, 1200CMI, 1200ECM
1200-RSM5C10S	5mm, 100 Divisions (0.05mm)	25mm	10X	20mm	1200SH, 1200SF, 1100Z, 1100S
1200-RSM5C10Z	5mm, 100 Divisions (0.05mm)	25mm	10X	20mm	1200Z, 1100Z, 1100S
1200-RSM5C15SZ	5mm, 100 Divisions (0.05mm)	28mm	15X	15mm	1200SH, 1200SF, 1200Z, 1100Z, 1100S

10mm, 100 Divisions (0.1mm)

Cat. No.	Reticle Description	Reticle Diameter	Eyepiece	Eyepiece F.O.V.	For Series Models
1400-RSM10C10C	10mm, 100 Divisions (0.1mm)	21mm	10X	18mm	1400BR, 1400PH, 1400FL
1400-RSM10C15C	10mm, 100 Divisions (0.1mm)	21mm	15X	13mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1400-RSM10C20C	10mm, 100 Divisions (0.1mm)	21mm	20X	9.5mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1200-RSM10C10C	10mm, 100 Divisions (0.1mm)	19mm	10X	18mm	1200CM, 1200MM, 1200CMI, 1200ECM
1200-RSM10C10S	10mm, 100 Divisions (0.1mm)	25mm	10X	20mm	1200SH, 1200SF, 1100Z, 1100S
1200-RSM10C10Z	10mm, 100 Divisions (0.1mm)	25mm	10X	20mm	1200Z, 1100Z, 1100S
1200-RSM10C15SZ	10mm, 100 Divisions (0.1mm)	28mm	15X	15mm	1200SH, 1200SF, 1200Z, 1100Z, 1100S

0.500 in., 100 Divisions (0.005 in.)

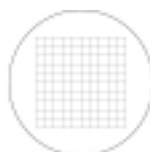
Cat. No.	Reticle Description	Reticle Diameter	Eyepiece	Eyepiece F.O.V.	For Series Models
1400-RSE05C10C	0.500 in., 100 Divisions (0.005 in.)	21mm	10X	18mm	1400BR, 1400PH, 1400FL
1400-RSE05C15C	0.500 in., 100 Divisions (0.005 in.)	21mm	15X	13mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1400-RSE05C20C	0.500 in., 100 Divisions (0.005 in.)	21mm	20X	9.5mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1200-RSE05C10C	0.500 in., 100 Divisions (0.005 in.)	19mm	10X	18mm	1200CM, 1200MM, 1200CMI, 1200ECM
1200-RSE05C10S	0.500 in., 100 Divisions (0.005 in.)	25mm	10X	20mm	1200SH, 1200SF, 1100Z, 1100S
1200-RSE05C10Z	0.500 in., 100 Divisions (0.005 in.)	25mm	10X	20mm	1200Z, 1100Z, 1100S
1200-RSE05C15SZ	0.500 in., 100 Divisions (0.005 in.)	28mm	15X	15mm	1200SH, 1200SF, 1200Z, 1100Z, 1100S



5mm Scale



10mm Scale



100 Square Grid



400 Square Grid



Crosshair



Pointer

Grid Reticles

10mm x 10mm, 100 Squares (1mm²)

Cat. No.	Reticle Description	Reticle Diameter	Eyepiece	Eyepiece F.O.V.	For Series Models
1400-RGM10110C	10x10mm, 100 Squares (1mm ²)	21mm	10X	18mm	1400BR, 1400PH, 1400FL
1400-RGM10115C	10x10mm, 100 Squares (1mm ²)	21mm	15X	13mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1400-RGM10120C	10x10mm, 100 Squares (1mm ²)	21mm	20X	9.5mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1200-RGM10110C	10x10mm, 100 Squares (1mm ²)	19mm	10X	18mm	1200CM, 1200MM, 1200CMI, 1200ECM
1200-RGM10110S	10x10mm, 100 Squares (1mm ²)	25mm	10X	20mm	1200SH, 1200SF, 1100Z, 1100S
1200-RGM10110Z	10x10mm, 100 Squares (1mm ²)	25mm	10X	20mm	1200Z, 1100Z, 1100S
1200-RGM10115SZ	10x10mm, 100 Squares (1mm ²)	28mm	15X	15mm	1200SH, 1200SF, 1200Z, 1100Z, 1100S

10mm x 10mm, 400 Squares (0.5mm²)

Cat. No.	Reticle Description	Reticle Diameter	Eyepiece	Eyepiece F.O.V.	For Series Models
1400-RGM100510C	10x10mm, 400 Squares (0.5mm ²)	21mm	10X	18mm	1400BR, 1400PH, 1400FL
1400-RGM100515C	10x10mm, 400 Squares (0.5mm ²)	21mm	15X	13mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1400-RGM100520C	10x10mm, 400 Squares (0.5mm ²)	21mm	20X	9.5mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1200-RGM100510C	10x10mm, 400 Squares (0.5mm ²)	19mm	10X	18mm	1200CM, 1200MM, 1200CMI, 1200ECM
1200-RGM100510S	10x10mm, 400 Squares (0.5mm ²)	25mm	10X	20mm	1200SH, 1200SF, 1100Z, 1100S
1200-RGM100510Z	10x10mm, 400 Squares (0.5mm ²)	25mm	10X	20mm	1200Z, 1100Z, 1100S
1200-RGM100515SZ	10x10mm, 400 Squares (0.5mm ²)	28mm	15X	15mm	1200SH, 1200SF, 1200Z, 1100Z, 1100S



General Reticles

Crosshair

Cat. No.	Reticle Description	Reticle Diameter	Eyepiece	Eyepiece F.O.V.	For Series Models
1400-RCH10C	Crosshair	21mm	10X	18mm	1400BR, 1400PH, 1400FL
1400-RCH15C	Crosshair	21mm	15X	13mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1400-RCH20C	Crosshair	21mm	20X	9.5mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1200-RCH10C	Crosshair	19mm	10X	18mm	1200CM, 1200MM, 1200CMI, 1200ECM
1200-RCH10S	Crosshair	25mm	10X	20mm	1200SH, 1200SF, 1100Z, 1100S
1200-RCH10Z	Crosshair	25mm	10X	20mm	1200Z, 1100Z, 1100S
1200-RCH15SZ	Crosshair	28mm	15X	15mm	1200SH, 1200SF, 1200Z, 1100Z, 1100S

Pointer

Cat. No.	Reticle Description	Reticle Diameter	Eyepiece	Eyepiece F.O.V.	For Series Models
1400-RPT10C	Pointer	21mm	10X	18mm	1400BR, 1400PH, 1400FL
1400-RPT15C	Pointer	21mm	15X	13mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1400-RPT20C	Pointer	21mm	20X	9.5mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1200-RPT10C	Pointer	19mm	10X	18mm	1200CM, 1200MM, 1200CMI, 1200ECM
1200-RPT10S	Pointer	25mm	10X	20mm	1200SH, 1200SF, 1100Z, 1100S
1200-RPT10Z	Pointer	25mm	10X	20mm	1200Z, 1100Z, 1100S
1200-RPT15SZ	Pointer	28mm	15X	15mm	1200SH, 1200SF, 1200Z, 1100Z, 1100S

Application Specific Reticles

Howard Mold Count (HMC)

Cat. No.	Reticle Description	Reticle Diameter	Eyepiece	Eyepiece F.O.V.	For Series Models
1400-RHM10C	Howard Mold Count (HMC)	21mm	10X	18mm	1400BR, 1400PH, 1400FL
1400-RHM15C	Howard Mold Count (HMC)	21mm	15X	13mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1400-RHM20C	Howard Mold Count (HMC)	21mm	20X	9.5mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1200-RHM10C	Howard Mold Count (HMC)	19mm	10X	18mm	1200CM, 1200MM, 1200CMI, 1200ECM

Walton & Becket (3:1 Ratio)

Cat. No.	Reticle Description	Reticle Diameter	Eyepiece	Eyepiece F.O.V.	For Series Models
1400-RWB310C	Walton & Becket (3:1 Ratio)	21mm	10X	18mm	1400BR, 1400PH, 1400FL
1400-RWB315C	Walton & Becket (3:1 Ratio)	21mm	15X	13mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1400-RWB320C	Walton & Becket (3:1 Ratio)	21mm	20X	9.5mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1200-RWB310C	Walton & Becket (3:1 Ratio)	19mm	10X	18mm	1200CM, 1200MM, 1200CMI, 1200ECM

Stage Micrometers

Cat. No.	Scale	Increments	For Series Models
1200-SMM	1.0mm	0.01mm / 0.05mm / 0.1mm	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1200-SME	0.1 in.	0.001 in. / 0.005 in. / 0.01 in.	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM
1200-SMME	1.0mm / 0.1 in.	0.01mm / 0.05mm / 0.1mm -- 0.001 in. / 0.005 in. / 0.01 in.	1400BR, 1400PH, 1400FL, 1200CM, 1200MM, 1200CMI, 1200ECM

Reticle Selection

When selecting the proper reticle, ONLY the objective power should be taken into consideration. The following equation is used:

$$\text{DESIRED VALUE} \times \text{OBJECTIVE POWER} = \text{RETICLE DIVISION}$$

Example: 0.01mm x 10X = 0.1mm per division

Therefore: 0.1mm x 100 divisions = 10mm/100 parts (1200-RSM10C Series)

Based on the following equation, listed below are examples of the different values obtained from a single reticle (cat. no. 1200-RSM10C), when used with various objective settings:

$$\frac{\text{RETICLE DIVISION}}{\text{OBJECTIVE POWER}} = \text{VALUE PER DIVISION}$$

- 0.1mm @ 4X Objective Setting = 0.25mm per division
- 0.1mm @ 10X Objective Setting = 0.01mm per division
- 0.1mm @ 25X Objective Setting = 0.04mm per division
- 0.1mm @ 40X Objective Setting = 0.025mm per division
- 0.1mm @ 100X Objective Setting = 0.001mm per division

Reticles must be calibrated to each objective for precise measurements.

Calibration Procedure

Both the stage micrometer and eyepiece reticle should be graduated in the same system (Metric or English), it is easiest to find the number of times an object is magnified by the objective and the field lens of the given eyepiece when focused in the plane of the eyepiece reticle.

$$\frac{\text{VALUE ON EYEPIECE RETICLE}}{\text{VALUE ON STAGE MICROMETER}} = \text{MAGNIFICATION FACTOR}$$

Example: An object measures 3.4mm on the eyepiece reticle and 0.34mm on the stage micrometer. The magnification factor is 3.4 divided by 0.34 which equals 10.0.

Therefore:

$$\frac{\text{SIZE OF OBJECT IN THE EYEPIECE}}{\text{MAGNIFICATION FACTOR}} = \text{ACTUAL SIZE OF OBJECT}$$

Example: If an object measures 1.6mm on the eyepiece reticle, its actual size is 1.6 divided by 10.0 or 0.16mm.



Parts & Accessories



Condensers

Cat. No.	Type	Numerical Aperture	For Series Models
1400-CMAC	Brightfield	Abbe 1.25	1400BR, 1400PH, 1400FL
1400-CMPC	Zernike Phase Contrast	Abbe 1.25	1400BR, 1400PH, 1400FL
1400-CMDCD	Darkfield (Dry)	0.90	1400BR, 1400PH, 1400FL
1400-CMDCI	Darkfield (Immersion)	Abbe 1.25	1400BR, 1400PH, 1400FL
1200-CMAC	Brightfield	Abbe 1.25	1200CM
1200-CMPCA	Zernike Phase Contrast (Achromatic Objectives)	Abbe 1.25	1200CM (Achromatic)
1200-CMPCP	Zernike Phase Contrast (Plan Achromatic Objectives)	Abbe 1.25	1200CM (Plan Achromatic), 1200ECM
1200-AMAC	Brightfield	Abbe 1.25	1200MM, 1200ECM
1200-CMIPC	Zernike Phase Contrast	0.40	1200CMI
1200-CMIBC	Brightfield	0.40	1200CMI
1200-CMDCD	Darkfield (Dry)	0.85	1200CM, 1200MM, 1200ECM
1200-CMDCI	Darkfield (Immersion)	Abbe 1.25	1200CM, 1200MM, 1200ECM
1200-SDC	Darkfield	N/A	1200ZF, 1200ZH, 1200SH, 1200SF, 1100Z, 1100S



epieces

Cat. No.	Power	Type	Field Of View	For Series Models
1400-10XCME	10X	WideField (DIN)	18mm	1400BR, 1400PH, 1400FL
1400-15XCME	15X	Semi-WideField (DIN)	13mm	1400BR, 1400PH, 1400FL
1400-20XCME	20X	Semi-WideField (DIN)	9.5mm	1400BR, 1400PH, 1400FL
1200-10XAME	10X	WideField (DIN)	18mm	1200MM & 1200ECM
1200-10XCME	10X	WideField (DIN)	18mm	1200CM & 1200CMI
1200-16XCME	16X	Semi-WideField (DIN)	11mm	1200CM, 1200MM, 1200ECM, 1200CMI
1200-20XCME	20X	Semi-WideField (DIN)	11mm	1200CM, 1200MM, 1200ECM, 1200CMI
1200-10XSME	10X	WideField (DIN)	20mm	1200SH, 1200SF, 1100Z
1200-10XZME	10X	WideField (DIN)	20mm	1200Z
1200-15XSZME	15X	Semi-WideField (DIN)	15mm	1200Z, 1200SH, 1200SF, 1100Z
1200-20XSZME	20X	Semi-WideField (DIN)	12mm	1200Z, 1200SH, 1200SF, 1100Z
1100-10XAMHE	10X	WideField (DIN)	18mm	1100AMH & 1109AMI

ilters

Cat. No.	Description	For Series Models
1400-BF	Blue, Substage, 32mm Diameter	1400BR, 1400PH, 1400FL
1400-GF	Green, Substage, 32mm Diameter	1400BR, 1400PH, 1400FL
1200-BF	Blue (Frosted), Substage, 32mm Diameter	1200CM, 1200MM, 1200ECM, 1200CMI
1200-GF	Green (Frosted), Substage, 32mm Diameter	1200CM, 1200MM, 1200ECM, 1200CMI
1200-NF	Neutral (Frosted), Substage, 32mm Diameter	1200CM, 1200MM, 1200ECM, 1200CMI
1200-BFZH	Blue, Stage, 40mm Diameter	1200ZH





luorescence its Accessories

Cat. No.	Description	For Series Models
1400-KFL	Fluorescence Upgrade Kit -- Includes 4X, 10X, 40X, 100X Achromatic Fluorescence Objectives; Illumination Assembly; Green & Blue Broadband Fluorescence Filters; Fluorescence Filter Holder; Power Supply	1400BR, 1400PH, 1400FL
1400-EFH	Fluorescence Filter Holder (No Filters)	1400FL

uses

Cat. No.	Description	For Series Models
1400-FS1	Fuse, Replacement, 0.25A, 250V	1400BR, 1400PH, 1400FL
1400-FS3	Fuse, Replacement, 5.0A, 250V	1400FL (External Power Supply)
1200-FS1	Fuse, Replacement, 0.5A, 250V	1200CM, 1200MM, 1200ECM, 1200CMI
1200-FS2	Fuse, Replacement, 5.0A, 250V	1200ECM (External Power Supply)
1200-FS3	Fuse, Replacement, 0.75A, 250V	1200SH, 1200SF, 1200ZF, 1200ZH, 1100Z

Immersion Oil

Cat. No.	Description	For Series Models
1200-IOG	Immersion Oil, Low Viscosity (1/4 oz. Bottle)	1400BR, 1400PH, 1400FL, 1200CM, 1200ECM, 1100AMH
1200-IOF	Immersion Oil, for Fluorescence (1/4 oz. Bottle)	1400FL, 1200ECM

ohler Illumination

Cat. No.	Description	For Series Models
1400-KIA	Field Diaphragm, for Kohler Illumination	1400BR, 1400PH, 1400FL
1200-KIA	Field Diaphragm, for Kohler Illumination	1200CM

Lamps

Cat. No.	Type	Electrical Information	For Series Models
1400-20WHL	Halogen	20W / 6V	1400BR, 1400PH, 1400FL
1400-100WMLS	Mercury (Standard)	100W	1400FL, 1200ECM
1400-100WMLO	Mercury (Osram Brand)	100W	1400FL, 1200ECM
1200-5WHL	Fluorescent	5W / 6V	1200ZF, 1200SF
1200-15WHRL	Halogen (Reflector)	15W / 6V	1200ZF, 1200ZH, 1100Z (Upper Illumination)
1200-15WHL	Halogen	15W / 6V	1200ZH, 1200SH, 1200SF, 1100Z
1200-20WHL	Halogen	20W / 6V	1200CM, 1200MM, 1200ECM, 1200CMI, 1100AMH
1100-20WIL	Incandescent	20W / 110V	1109AMI, 1102SM, 1101EM
1100-20WIL-220	Incandescent	20W, 220V	1109AMI-220, 1102SM-220, 1101EM-220
1200-LEJV	Halogen, 3400K Color, 40-Hour Life	150W / 21V	1200-L150 Light Source
1200-LEKE	Halogen, 3250K Color, 200-Hour Life	150W / 21V	1200-L150 Light Source
1200-LL20	Halogen, 3100K Color, 2000-Hour Life	20W / 6V	1200-L20 Light Source



Lenses Supplementar

Cat. No.	Description	For Series Models
1200-SL05	0.5X, Reduction	1200Z
1200-SL10	1.0X, Optics Shield	1200Z
1200-SL15	1.5X, Magnification	1200Z
1200-SL20	2.0X, Magnification	1200Z



Objectives

Cat. No.	Power	Type	Numerical Aperture	Working Distance	Field Of View	For Series Models
1400-004XBAO	4X	Achromatic (DIN)	0.10	17.0mm	4.5mm	1400BR, 1400PH, 1400FL
1400-010XBAO	10X	Achromatic (DIN)	0.25	8.0mm	1.8mm	1400BR, 1400PH, 1400FL
1400-020XBAO	20X	Achromatic (DIN)	0.40	0.50mm	0.90mm	1400BR, 1400PH, 1400FL
1400-040XBAO	40X	Achromatic (DIN)	0.65	0.40mm	0.45mm	1400BR, 1400PH, 1400FL
1400-060XBAO	60X	Achromatic (DIN)	0.85	0.30mm	0.30mm	1400BR, 1400PH, 1400FL, 1200CM, 1200ECM
1400-100XBAO	100X (Oil)	Achromatic (DIN)	1.25	0.25mm	0.18mm	1400BR, 1400PH, 1400FL
1400-004XBPO	4X	Plan Achromatic (DIN)	0.10	17.0mm	4.5mm	1400BR, 1400PH, 1400FL
1400-010XBPO	10X	Plan Achromatic (DIN)	0.25	8.0mm	1.8mm	1400BR, 1400PH, 1400FL
1400-020XBPO	20X	Plan Achromatic (DIN)	0.40	0.50mm	0.90mm	1400BR, 1400PH, 1400FL
1400-040XBPO	40X	Plan Achromatic (DIN)	0.65	0.40mm	0.45mm	1400BR, 1400PH, 1400FL
1400-060XBPO	60X	Plan Achromatic (DIN)	0.85	0.30mm	0.30mm	1400BR, 1400PH, 1400FL, 1200CM, 1200ECM
1400-100XBPO	100X (Oil)	Plan Achromatic (DIN)	1.25	0.25mm	0.18mm	1400BR, 1400PH, 1400FL
1400-010XPPO	10X	Plan Achromatic Phase (DIN)	0.25	8.0mm	1.8mm	1400BR, 1400PH, 1400FL
1400-020XPPO	20X	Plan Achromatic Phase (DIN)	0.40	0.50mm	0.90mm	1400BR, 1400PH, 1400FL
1400-040XPPO	40X	Plan Achromatic Phase (DIN)	0.65	0.40mm	0.45mm	1400BR, 1400PH, 1400FL
1400-100XPPO	100X (Oil)	Plan Achromatic Phase (DIN)	1.25	0.25mm	0.18mm	1400BR, 1400PH, 1400FL
1400-004XFLO	4X	Achromatic Fluorescence (DIN)	0.10	17.0mm	4.5mm	1400BR, 1400PH, 1400FL
1400-010XFLO	10X	Achromatic Fluorescence (DIN)	0.25	8.0mm	1.8mm	1400BR, 1400PH, 1400FL
1400-040XFLO	40X	Achromatic Fluorescence (DIN)	0.65	0.40mm	0.45mm	1400BR, 1400PH, 1400FL
1400-100XFLO	100X (Oil)	Achromatic Fluorescence (DIN)	1.25	0.25mm	0.18mm	1400BR, 1400PH, 1400FL
1200-004XBAO	4X	Achromatic (DIN)	0.10	17.0mm	4.5mm	1200CM
1200-010XBAO	10X	Achromatic (DIN)	0.25	8.0mm	1.8mm	1200CM
1200-020XBAO	20X	Achromatic (DIN)	0.40	0.50mm	0.90mm	1200CM
1200-040XBAO	40X	Achromatic (DIN)	0.65	0.40mm	0.45mm	1200CM
1200-100XBAO	100X (Oil)	Achromatic (DIN)	1.25	0.25mm	0.18mm	1200CM
1200-004XBPO	4X	Plan Achromatic (DIN)	0.10	17.0mm	4.5mm	1200CM, 1200MM, 1200ECM
1200-010XBPO	10X	Plan Achromatic (DIN)	0.25	8.0mm	1.8mm	1200CM, 1200MM, 1200ECM
1200-025XBPO	25X	Plan Achromatic (DIN)	0.40	0.50mm	0.72mm	1200CM & 1200ECM
1200-040XBPO	40X	Plan Achromatic (DIN)	0.65	0.40mm	0.45mm	1200CM & 1200ECM
1200-100XBPO	100X (Oil)	Plan Achromatic (DIN)	1.25	0.25mm	0.18mm	1200CM, 1200MM, 1200ECM
1200-010XPAO	10X	Achromatic Phase (DIN)	0.25	8.0mm	1.8mm	1200CM
1200-020XPAO	20X	Achromatic Phase (DIN)	0.40	0.50mm	0.90mm	1200CM
1200-040XPAO	40X	Achromatic Phase (DIN)	0.65	0.40mm	0.45mm	1200CM
1200-100XPAO	100X (Oil)	Achromatic Phase (DIN)	1.25	0.25mm	0.18mm	1200CM
1200-010XPPO	10X	Plan Achromatic Phase (DIN)	0.25	8.0mm	1.8mm	1200CM & 1200ECM
1200-025XPPO	25X	Plan Achromatic Phase (DIN)	0.40	0.50mm	0.72mm	1200CM & 1200ECM
1200-040XPPO	40X	Plan Achromatic Phase (DIN)	0.65	0.40mm	0.45mm	1200CM & 1200ECM
1200-100XPPO	100X (Oil)	Plan Achromatic Phase (DIN)	1.25	0.25mm	0.18mm	1200CM & 1200ECM
1200-025XFLO	25X	Achromatic Fluorescence (DIN)	0.65	0.62mm	0.72mm	1200ECM
1200-040XFLO	40X (Glycerin)	Achromatic Fluorescence (DIN)	1.00	0.25mm	0.45mm	1200ECM
1200-025XLRO	25X	Plan Achromatic (DIN)	0.40	4.8mm	0.72mm	1200MM
1200-040XLRO	40X	Plan Achromatic (DIN)	0.60	3.3mm	0.45mm	1200MM
1200-010XLBO	10X	Plan Achromatic (DIN)	0.25	8.1mm	1.8mm	1200CMI
1200-025XLBO	25X	Plan Achromatic (DIN)	0.40	4.8mm	0.72mm	1200CMI
1200-040XLBO	40X	Plan Achromatic (DIN)	0.60	3.3mm	0.45mm	1200CMI
1200-010XLPO	10X	Plan Achromatic Phase (DIN)	0.25	8.1mm	1.8mm	1200CMI
1200-025XLPO	25X	Plan Achromatic Phase (DIN)	0.40	4.8mm	0.72mm	1200CMI
1200-040XLPO	40X	Plan Achromatic Phase (DIN)	0.60	3.3mm	0.45mm	1200CMI
1100-004XBAO	4X	Achromatic (DIN)	0.10	17.0mm	4.5mm	1100AMH
1100-010XBAO	10X	Achromatic (DIN)	0.25	8.0mm	1.8mm	1100AMH
1100-040XBAO	40X	Achromatic (DIN)	0.65	0.40mm	0.45mm	1100AMH
1100-100XBAO	100X (Oil)	Achromatic (DIN)	1.25	0.25mm	0.18mm	1100AMH

Ordering

Cat. No.	Description	For Series Models
1400-PAK	Polarizer & Analyzer	1400BR, 1400PH, 1400FL
1200-PAK	Polarizer & Analyzer	1200CM





Phase Contrast Kits Accessories

Cat. No.	Description	For Series Models
1400-KPH	Phase Contrast Upgrade Kit -- Includes 10X, 20X, 40X, 100X, Plan Phase Contrast Objectives, Zernike Phase Condenser, & Centering Telescope	1400BR, 1400PH, 1400FL
1400-PCT	Centering Telescope, for Phase Contrast	1400BR, 1400PH, 1400FL
1200-PCT	Centering Telescope, for Phase Contrast	1200CM, 1200ECM, 1200CMI

Stage Plates

Cat. No.	Description	For Series Models
1200-SPFR	Frosted, 75mm Diameter	1200ZF, 1200ZH, 1200SH, 1200SF, 1100Z, 1100S
1200-SPBW	Black & White Reversible, 75mm Diameter	1200ZF, 1200ZH, 1200SH, 1200SF, 1100Z, 1100S



Stereo Adapter for Bausch & Lomb

Cat. No.	Description	For Series Models
1200-ABLZ	Adapter For Fitting VanGuard Stereo Heads (1200Z) to Bausch & Lomb Pod Rings	1200Z Heads

Cleaning Kit Microscope Optics

Cat. No.	Description	For Series Models
1200-MLCK	Cleaning Kit -- Includes Cleaning Liquid (30ml Bottle), Camel Hair Blower Brush, Lens Tissue, Cotton Swabs	All Microscope Models