

# Starrett®



VISION SYSTEMS

HDV300  
HDV400  
HDV500  
KMic-KMR  
MV SERIES  
MVR SERIES  
AV SERIES  
AVR SERIES  
AV300+  
AV350+  
AV300+ MICRO  
LF SERIES

METROLOGY  SOLUTIONS

## STARRETT VISION METROLOGY SYSTEMS

RUGGED, ACCURATE & EASY TO USE

The HDV Horizontal Digital Video Comparators combine the best features of a horizontal optical comparator and a vision metrology system. With a rigid steel design, the HDV is configured like a traditional horizontal comparator. The workstages are the same as the Starrett field-proven HB400 bench top and HF750 floor standing comparators, with a 110lb (50kg) and 330 lb (150kg) load capacities respectively. The heart of these systems centers on a uniquely designed interchangeable lens mounting system coupled to a hi-resolution color digital video camera (patent pending). These systems offer zoom optics or a choice of telecentric lenses for micron-level resolution and optical distortion as low as 0.001% for accurate field-of-view (FOV) measurements. Telecentric lenses provide a maximum field of view of up to 3 x 2.5" (76.5 x 64mm). Stage movement can be related to the imported file allowing part comparison up to 12" (300mm) on the HDV300, 16" (400mm) on the HDV400, and up to 20" (500mm) on the HDV500.

The HDV systems house a powerful 64-bit PC, which runs MetLogix™ M3 Metrology software. With M3 software, DXF CAD files can be imported and 2D "Go-No-Go" digital overlays can be developed directly from the CAD files. Video edge detection (VED) allows real-time interaction of the imported file with the video image of the part being inspected. Productivity, speed and accuracy are all enhanced. HDV300 and HDV400 systems are available in manual or CNC control, while the HDV500 CNC control is standard.



MetLogix™ M3 DXF/FOV software under Windows® Professional operating system is the powerhouse behind the HDV. Fully integrated with an M3 controller and a powerful 64-bit computer which runs the MetLogix™ software. The operator interface for the HDV300/HDV400 is a 24" (60cm) touch-screen color monitor and a 42" (107cm) color monitor for the HDV500. A keyboard is provided for ease of data entry and control when desired. All electronics are located in the housing for an integrated design with minimal external wiring.

FEATURE	METLOGIX M3
PC installed in main housing	x
Color graphics	x
Windows® Professional operating system	x
X-Y-Q (angle) measurements	x
2D geometry software with skew	x
Video edge detection (VED)	x
CAD file import and export	x
FOV measurements	x
Elimination of overlays	x
Optional MetLogix™ Profile Fitting software	x
Software developer	MetLogix™

### HDV300/HDV400 OPTICS

The HDV300 or HDV400 are available with a choice of seven telecentric lenses and a 6.5:1 zoom lens. Six of the telecentric lenses are interchangeable using a bayonet-style lens mounting system (US Patent No. 9,360,435) which allows quick changeover between magnifications and between FOV or zoom operation by the user. The 0.14x fixed telecentric lens has a dedicated mounting configuration and illuminators.

SYSTEM PARAMETER	TELECENTRIC LENSES							6.5:1 ZOOM LENS	
	0.14x	0.3x	0.5x	0.8x	1.0x	2.0x	4.0x	0.7x	4.5x
Optical Magnification	0.14x	0.3x	0.5x	0.8x	1.0x	2.0x	4.0x	0.7x	4.5x
Magnification on 24" Monitor	4.7x	10x	16.4x	27x	33x	69x	137x	22x	139x
Field of View Width and Height	2.36 x 2.0" (63 x 51mm)	1.1 x .94" (28 x 24mm)	.67 x .56" (17 x 14mm)	.41 x .35" (10.5 x 8.9mm)	.33 x .28" (8.4 x 7.1mm)	.16 x .14" (4.2 x 3.7mm)	.08 x .07" (2.1 x 1.8mm)	.47 x .40" (12 x 10.1mm)	.74 x .62" (1.87 x 1.56mm)
Working Distance	4.3" (110mm)							3.5" (88mm)	

### HDV500 OPTICS

The HDV500 is available with a choice of three interchangeable telecentric lenses and a 6.5:1 zoom lens. Lenses are installed using a bayonet-style lens mounting system (patent pending) which allows quick changeover between magnifications and between FOV or zoom operation by the user.

SYSTEM PARAMETER	TELECENTRIC LENSES			6.5:1 ZOOM LENS	
	0.11x	0.16x	0.24x	0.7x	4.5x
Optical Magnification	0.11x	0.16x	0.24x	0.7x	4.5x
Magnification on 42" Monitor	6.5x	9.3x	14.7x	41x	262x
Field of View Width and Height	3 x 2.5" (76.5 x 64mm)	2.1 x 1.7" (53.8 x 45mm)	1.3 x 1.1" (34.7 x 29mm)	.47 x .40" (12 x 10.1mm)	.08 x 0.06" (1.9 x 1.6mm)
Working Distance	9.0" (228mm)	6.25" (159mm)	6.0" (150mm)	3.5" (88mm)	

## HORIZONTAL DIGITAL VIDEO COMPARATOR

The HDV500 Digital Video Comparator offers the best features of a large, floor standing horizontal optical comparator and a vision metrology system. Configured like a traditional horizontal comparator, the HDV500 has a long travel 20 x 8" (500 x 200mm) X-Y stage and heavy-duty steel construction. The workstage is the same as the popular HF600 and HF750 comparators with a 330lb (150kg) load capacity. Much like the HDV300 and HDV400, the heart of the system centers on a uniquely designed interchangeable bayonet-style lens mounting system to a hi-resolution color digital video camera (patent pending). The HDV500 is available with zoom optics or a choice of three telecentric lens options for micron-level resolution and optical distortion as low as 0.002% for accurate field-of-view (FOV) measurements.



### FEATURES

- Steel construction with nickel plated stage tooling plate
- Stage Travel (HDV500): 20 x 8" (500 x 200mm)
- 32 x 8" (810 x 200mm) workstage top plate
- CNC controls standard
- Maximum Load Capacity: 330lb (150kg)
- Focus Travel: 3" (75mm)
- Helix angle adjustment with  $\pm 15^\circ$  Vernier scale
- X-Y and focus positioning via joystick and trackball positioning
- Wireless mouse
- Heidenhain glass scales for 0.5 $\mu$ m (.00002") X and Y resolution
- LED illumination for surface and profile lighting
- 5 mega-pixel black and white digital video camera (2448 x 2058 pixels)
- Ultra-low distortion to 0.002% for telecentric FOV measurements
- 64-bit Intel® Processor
- Windows® Professional operating system
- MetLogix™ M3 software with DXF/FOV importing and comparison
- Software and measurement image (part) displayed on 42" (107cm) color monitor (1920 x 1080 pixels)
- Floor standing system
- X-Y Accuracy:  $E2 = 3.0\mu\text{m} + L/33$

### OPTIONS

- 3 interchangeable telecentric lenses for fields of view (FOV) from 1.4 x 1.1" to 3.0 x 2.5" including .11x, .16x and .24x lens magnification
- 6.5:1 zoom optics - interchangeable
- MetLogix™ Profile Fitting software
- Extensive line of accessories, work holding devices and calibration standards



## HORIZONTAL DIGITAL VIDEO COMPARATOR

The HDV300 and HDV400 X-Y stage travel are 12 x 6" (300 x 150mm) and 16 x 6" (400 x 150mm) respectively. Each HDV Digital Video Comparator features a 5-megapixel color video camera and a choice of zoom optics or seven telecentric lens options (US Patent No. 9,360,435) for ultra-low optical distortion field-of-view (FOV) measurements.

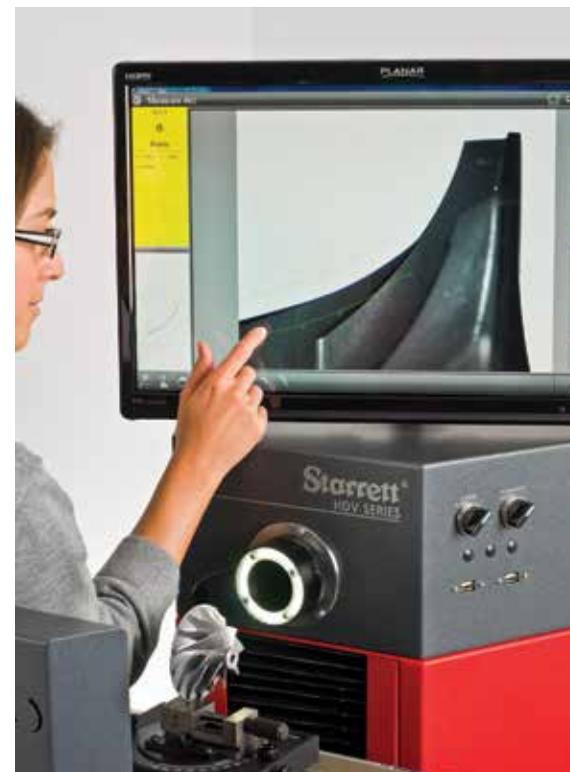


### FEATURES

- Steel construction with hard anodized X Y stage.
- Stage Travel (HDV300): 12 x 6" (300 x 150mm)
- Stage Travel (HDV400): 16 x 6" (400 x 150mm)
- 21.3 x 5.1" (540 x 130mm) workstage
- Maximum Load Capacity: 110lb (50kg)
- Focus Travel: 2" (51mm) of focus travel
- Helix angle adjustment with  $\pm 15^\circ$  Vernier scale
- Manual X-Y and focus positioning via hand wheels
- Heidenhain glass scales for 0.00002" (0.5 $\mu$ m) X and Y resolution
- LED illumination for surface and profile lighting
- 5 megapixel color video camera (2448 x 2058 pixels)
- Ultra-low distortion to 0.001% for telecentric FOV measurements
- 64-bit Intel® Processor
- Windows® Professional operating system
- MetLogix™ M3 software with DXF/FOV importing and comparison
- Parts displayed on 24" (60 cm) touch-screen color monitor (1920 x 1080 pixels)
- Bench top system
- X-Y Accuracy:  $E2 = 3.0\mu\text{m} + L/33$

### OPTIONS

- 6 interchangeable telecentric lenses for field of view from 2.36 x 1.77" to 0.09 x 0.07" including .3x, .5x, .8x, 1.0x, 2.0x and 4.0x lens magnifications
- 6.5:1 zoom optics - interchangeable
- .14x fixed telecentric lens (FOV size) non-interchangeable - utilizes black and white camera as standard
- MetLogix™ Profile Fitting software
- CNC controls
- 23" or 32" purpose built cabinet stands
- Extensive line of accessories, work holding devices and calibration standards



## ACCESSORIES

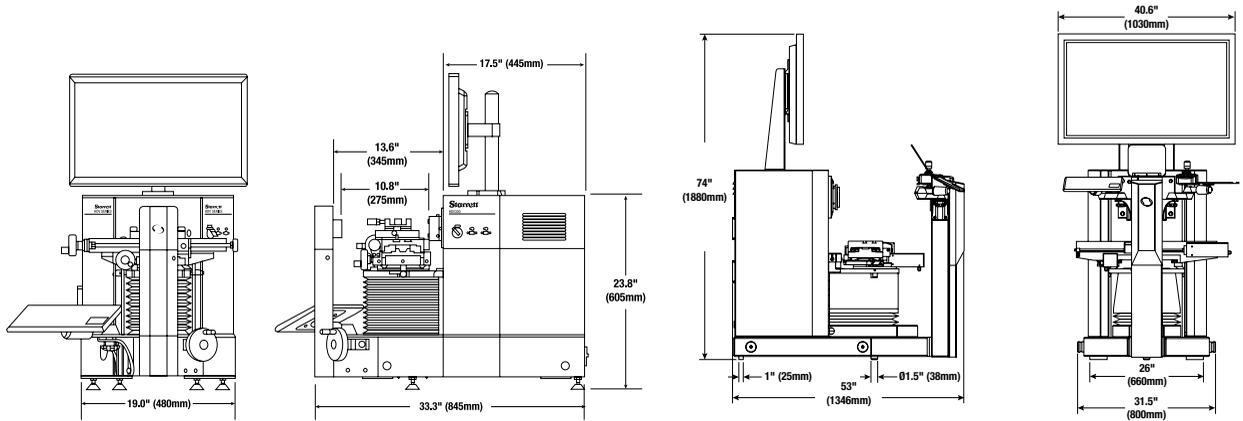
Starrett manufactures a comprehensive range of fixtures and accessories for our line of optical comparators and vision metrology systems.

### ACCESSORIES

Precision Centers and Vees 	Rotary Vee Blocks 	Cabinet Stands for HDV300 and HDV400 
Vertical Glass Plate Holders 	Fixed Visers 	
Rotary Visers 	Interchangeable Lenses 	

## HDV300 AND HDV400 DIMENSIONS

## HDV500 DIMENSIONS



	HDV300	HDV400	HDV500
Configuration	Benchtop	Benchtop	Floor Standing
Shipping Weight	430lbs 195kg	440lbs 200kg	1400lbs 635kg
Net Weight	220lbs 100kg	230lbs 105kg	1330lbs 600kg
Shipping Dimensions	51 x 52 x 38" 130 x 132 x 96cm	51 x 52 x 38" 130 x 132 x 96cm	84 x 54 x 72" 214 x 138 x 183cm

### Starrett Metrology Division

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### HDV Vision Systems

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Specifications Subject to Change