Quality Digest

Optical/Vision Systems Guide

The 2001 Quality Sourcebook's new Optical/Vision Systems Guide features an array of products representing an assortment of technologies and a wide range of uses. As with all of our guides, the *Optical/Vision Systems Guide* is intended to assist readers in the search for the products and services they desire. To ensure the guide's accuracy, we only list information that the vendors directly provide to us.

For more information on any of the products or services listed in this section, contact the companies directly. Please be sure to mention that you saw their listings in *Quality Digest's* 2001 Quality Sourcebook.

Optical/Vision Systems Guide

The matrix provides an alphabetical listing for each of about 40 manufacturers and their optical/dimensional products, including optical comparators, measuring microscopes and video measurement systems. Each product listing includes critical product specifications to help you narrow your choices when selecting an optical or video measurement product or system. For manufacturers that sell product lines that vary only in stage size, screen size and so forth, we combined individual products within a series into one entry and then listed the range of specifications for that entry.

The directory provides contact information and Web addresses for optical dimensional manufacturers and a brief description of the company's products. (Please note that not all companies provided us with descriptions.)

The Vision Systems Directory gives the name, address, phone and fax numbers, and Web sites of companies that manufacture measuring and detecting microscopes, miniature cameras, high-resolution cameras mounted on CMMs, and laser and X-ray measurement equipment. Among the most common components of these systems are cameras, frame grabbers, PCs and software. The directory also includes descriptions of specific products that each company provides.

If you find this guide helpful or have any observations or questions you'd like to share, please contact us by phone or fax, or e-mail us at *sourcebook@qualitydigest.com.*

Glossary

A2LA—American Association for Laboratory Accreditation

ACIL—American Council of Independent Laboratories

ANSI—American National Standards Institute

ASME—American Society of Mechanical Engineers

Brightfield—an illumination technique that provides flat, even lighting of the field of view

CAD—computer-aided design

CAE—computer-aided engineering

CAM—computer-aided manufacturing

Confocal microscope—a visual inspection device that uses white light or lasers to construct a highly detailed map of a 3-D sample, optically sectioning a given sample point-by-point and layer-by-layer

Darkfield—an illumination technique that lights the specimen surface from an oblique angle to highlight surface problems

DIN—Deutsches Institut für Normung (German national standards body)

IEEE—Institute of Electrical and Electronics Engineers

NIST—National Institute of Standards and Technology

Optical comparator—a visual inspection device that uses large ground-glass screens for imaging, offering a much larger field of view than microscopes at a somewhat lower resolution

Profile projector—Optical comparator

SCC—Standards Council of Canada

SRM—standard reference material

Optical Dimensional Measurement Systems

Note 1: OC = Optical Comparator, VM = Video Measurement, MM = Measuring Microscope

Company/Product	Machine Type (Note 1)	Stage Size X (in.)	Stage Size Y (in.)	Stage Travel X (in.)	Stage Travel Y (in.)	Stage Travel Z (in.)	Stage Capacity (lbs.)	Lenses (Z=Zoom F=Fixed)	Scale Resolution	Illum. Profile	Illum. Transmitted	Illum. TTL	Illum. Diascopic	Illum. External	Screen Dia. (in.)	Display Readout	Op. Manual	Op. DCC or CNC	Top	Bottom	Ring	Other
Acu-Gage Systems Ph. 800-422-2283 Fax 603-626-1277 www.acu-gage.com																						
Acu-Gage I Linear Design	VM	24-132		12-120			1,000	Z: 7:1 F: 3", 3/4"	20-80 μ"			x				digital linear scales	x	x	x		x	TTL, LED
HPL ø83 and HPL 123	VM	14-18	14-18	8-12	8-12	4-10	25	Z: 7:1 F: 3", 3/4"	20-40 μ"			x				digital linear scales, rotary enc.	x	x	x		x	TTL, LED
High Speed Line (HSL)	VM	48-60	48-72	24-36	24-48	4-10	25	Z: 7:1 F: 3", 3/4"	20-80 μ"			x				digital linear scales, rotary enc.	x	x	x		x	TTL, LED
Linear Motor Design (LMD)	VM	72	72-120	48	48-96	4-10		Z: 7:1 F: 6"	20-80 μ"			x				digital linear scales, rotary enc.	x	x	x		x	TTL, LED
Adaptive Optics Associates Inc. Ph. 617-864-0201 Fax 617-864-5855 www.adaptiveoptics.com																						
OMS	VM							F: avail.	0.1"@140"					x		4-20 ma, digital data storage	x	x	x			
GRIMMS	VM							F: avail.	0.07"@140"							4-20 ma, digital data storage	x	x	x			
Brown & Sharpe Ph. 800-283-3600 Fax 401-886-2727 www.brownandsharpe.com																						
Profile 180	VM	31.5	7.1				170	Fixed	10 μ"	x	x					linear CCD arrays	x	x	x	x	x	collimated
Profile 20	VM	4.9	0.75				2.2	Fixed	10 μ"	x	x					linear CCD arrays	x	x	x	x	x	collimated
Profile 30	VM	8	1.2				3.8	Fixed	10 μ"	x	x					linear CCD arrays	x	x	x	x	x	collimated
Profile 50	VM	10.8	2				8.8	Fixed	10 μ"	x	x					linear CCD arrays	x	x	x	x	x	collimated
Profile 80	VM	13.8	3.1				16	Fixed	10 μ"	x	x					linear CCD arrays	x	x	x	x	x	collimated
Profile 80E	VM	19.7	3.1				16	Fixed	10 μ"	x	x					linear CCD arrays	x	x	x	x	x	collimated
Profile 80LS	VM	35.4	3.1				44	Fixed	10 μ"	x	x					linear CCD arrays	x	x	x	x	x	collimated
Computer Recognition Systems Inc. Ph. 617-491-7665 Fax 617-491-7753 www.crs-vision.com																						
Video Gauge	VM	120	120	120	120	60		Z: 2.5-120 mm F: avail.	1/32 pxl			x	x	x		multiple	x	x	x			custom
Data Optics Inc. Ph. 800-321-9026 Fax 734-483-9879 www.dataoptics.com																						
Super Gage	MM	12-36		12-36	12-36			F-40X	200 μ"			surface				direct reading scale			x			
Deltronic Corp. Ph. 800-451-6922 Fax 714-641-0946 www.deltronic.com																						
DH216/DH30	OC	10-25	6-9	10-12	6-8	3	100	Z: 10X-100X	1 μm	x	x		x	x	16-30	digital; X,Y,Z; geom. call-outs	x	x	x	x	x	
DV114	OC	8	4	8	4	3	50	Z: 10X-100X	1 μm	x	x		x	x	14	digital, PC-based	x	x	x	x	x	
DV124	OC	12	6	12	6	3.5	100	Z: 5X-100X	1 μm	x	x	surface	x	x	24	digital, PC-based; X,Y only	x	x	x	x	x	coaxial
DVC110/115	VM	8-12	4-6	2-8	2-4	4	25-50	Z: 25X-455X	1 μm	x	x	surface	x	x		digital; X,Y,Z; PC-based	x	x	x	x	x	coaxial
DVC120	VM			8-12	4-6	5	50-75	Z: 25X-455X	1 μm	x	x	surface	x	x		black box DRO; PC-based; PC-based	x	x	x	x	x	coaxial
DVC220	VM			18-24	18	8	100	Z: 25X-455X	1 μm	x	x		x	x		PC-based; X,Y,Z	x	x	x	x	x	coaxial
VMS121	VM	12	6	12	6	5	50	Z: 25X-455X	1 μm	x	x		x	x		PC-based; digital; X,Y,Z	x	x	x	x	x	coaxial
Dorsey Gage Co. Ph. 914-454-3111 Fax 914-454-3140 www.dorseygageco.com Optical Comparators, Vision Systems, Dimensional Gaging Products	OC/VM	30	10	30	10	6	500	Z: 10X-200X F: avail.	1 μm	x	x		x	x	12-60	Quadra Chek DRO, scales	x	x		x	x	
	OC/VM	30	10						1 μm	x	x		x	x	14-60		x	x		x	x	

Optical Dimensional Measurement Systems

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Company/Product	Machine Type (Note 1)	Stage Size X (in.)	Stage Size Y (in.)	Stage Travel X (in.)	Stage Travel Y (in.)	Stage Travel Z (in.)	Stage Capacity (lbs.)	Lenses (Z = Zoom, F = Fixed)	Scale Resolution	Profile	Transmitted	TTL	Diascopic	External	Screen Dia. (in.) (for opt. comp.)	Display Readout	Manual	DCC or CNC	Top	Bottom	Ring	Other
Flexbar Machine Corp. Ph. 800-879-7575 Fax 631-582-8487 www.flexbar.com — Opti-Flex Granite Video System	VM	8	4	12	12	4	25	Z: 5X-500X	1 μm	x	x	x		x		digital, software, glass scales	x	x	x	x		
Gaertner Scientific Corp. Ph. 847-673-5006 Fax 847-673-5009 www.gaertnerscientific.com — Toolmaker Cathetometer	VM/MM	4	4	4	4		5		1 μm					x		micrometer, digital scales	x	x	x			
GENX Corp. Ph. 616-323-3861 Fax 616-323-3861 — GENX 14" Optical Comparator	OC	13-16.5		6-10	4.5		250	F: 10X-62.5X	2 μm	surface				x	14	DRO, microprocessors, PC	x			x		
Hi-Scope Systems Co. Ph. 877-447-2673 Fax 201-768-3944 www.hiscopesystems.com — Hi-Scope System KH-1000	VM						up to 880	Z: 12X-600X F: 66mm	±2μm	x			internal			internal ring	x					internal ring
Mahr Federal Inc. Ph. 800-333-4243 Fax 401-784-3246 www.mahrfederal.com — MPC Dual Z Axis: Camera/Touch Probe	VM	18-72	18-36	18+	18+	18+	500+		.5μm	x	x	x	x	x		software, on-screen (PC)	x	x	x	x	x	coaxial, back
PMC	VM	18-49.4	18-36	49.4	36	28.8	44		.5μm	x	x	x		x		software, on-screen (PC)	x	x	x	x	x	coaxial, back
Wegu Compact 400	VM			15.7	9.8	9.8	22-44		0.5 μm	x	x			x		PC	x	x	x	x	x	coaxial, back
Wegu MS Series	VM				9.8	7.9			0.5 μm	x	x					PC	x	x	x	x		quadrant, LED
Wegu OMS Series	VM				7.9	7.9			0.5 μm	x	x					PC	x	x	x	x		quadrant, LED
Measure-All Inc. Ph. 800-758-2376 Fax 513-829-1105 www.measure-all.com — View Voyager	VM	12-24	12-24	9.8-15.7	15.7-53.1	9.8-13.8	50	F: 28X-10,000X	.1μm	x	x		surface	x		digital linear	x	x	x	x		quadrant, LED
Starrett Sigma	OC	4-12	4-6	12	8	8	50	F: 5X-100X	1 μm	x	x		x	x		linear digital scales	x	x	x	x		quadrant, LED
Pinnacle	VM	12-24	6-18	12-24	6-18	6-18		F: 28X-10,000X	.1μm	x	x			x		digital linear	x	x	x	x		LED
Opti-Flex & DataStar	VM	8	4	8	4	12	20	F: 5X-150X	1 μm	x	x	x		x		digital mics to linear scales	x	x	x	x	x	LED
Measurement Center Corp. Ph. 714-632-8511 Fax 714-632-3628 — Optical Video Laser Touch Probe	OC/VM/MM	2-70	2-120	2-70	2-120	6-24	50-250	Z: 20X-1,600X F: 10X-100X	0.01 μm	x	x			x	14-30	laser interferometer, linear scales	x	x	x	x	x	LED, coaxial
Micro-Metric Inc. Ph. 800-490-3333 Fax 408-452-8412 www.micro-metric.com — Integrated Measuring System (IMS)	VM/MM	8-16	8-16	4-8	4-8	0.1-8	20	F: 5X-150X	0.1 μ"	x						digital	x	x	x			
MicroLine	VM/MM	14	10	10	8	1	2	F: 5X-150X						LED			x	x	x	x	x	LED
Micro-Vu Corp. Ph. 707-838-6272 Fax 707-838-3985 www.microvu.com — Gantry	VM	24-60	16-48	24-60	18-48	6-12	250	Z: 25X-400X	.1-5 μm					LED		InSpec		x	x	x	x	coaxial
Matrix	VM	24-48	18-36	24-48	18-36	6-17	50	Z: 25X-400X	.5-1 μm					LED		Q-16 InSpec	x	x	x	x	x	coaxial
Quantum	VM	14-36	14-24	14-36	14-24	5.5-9	100	Z: 25X-400X	.2-5 μm					LED		InSpec	x	x	x	x	x	coaxial
Qubix	VM	9-36	6-18	8-36	6-18	6-12	100	Z: 25X-400X	.1-5 μm					LED		Q-16, InSpec	x	x	x	x	x	coaxial

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Company/Product	Machine Type (Note 1)	Stage Size X (in.)	Stage Size Y (in.)	Stage Travel X (in.)	Stage Travel Y (in.)	Stage Travel Z (in.)	Stage Capacity (lbs.)	Lenses (Z = Zoom, F = Fixed)	Scale Resolution	Profile	Transmitted	TTL	Diascopic	External	Screen Dia. (in.)	Display Readout	Manual	DCC or CNC	Top	Bottom	Ring	Other
Millennia 3 Inc. Ph. 412-492-0200 Fax 412-492-0202																						
Spectra	OC	12	6	12	6	3	25	Z: 10X-100X	1-2 μm	x			x	x	14	Q-16, Inspec	x		x	x	x	
Vector	VM	6-12	6-12	6-12	6-12	6-12	25	Z: 25X-400X	.5-2 μm	x			x	x	14	Q-16, InSpec	x	x	x	x	x	coaxial
Mycrona Inc. Ph. 734-453-5880 Fax 734-453-4076 www.mycrona.com																						
Cross Check-3D	VM							F: all	custom							customer's choice	x	x	x	x	x	all
Magnus	VM			17	16	6-12	50	Z: 10 Step F: 3X-50X	.1-.04 μm			x		x		measuring accuracy	x		x	x	x	custom
Primus	VM			12	6	6	25	Z: 10 Step F: 3X-50X	.1-5 μm			x		x		measuring accuracy	x		x	x	x	custom
Signum	VM			12	12	6-8	25	Z: 10 Step F: 3X-50X	.1-5 μm			x		x		measuring accuracy	x		x	x	x	custom
Nikon Inc. Ph. 631-547-8500 Fax 631-547-8518 www.nikonusa.com																						
Horizon 14E Horizontal Comparator	OC	20	6	20	6	2	100	F: 5X-200X	1 μm	x	x				14	linear glass scales	x					custom
MM 40 Optical Measurescope	MM	2-6	2-4	2-6	2-4	6	33	Z: custom F: 1X-100X	0.4 μm	x	x	x	x	x		linear glass scales	x		x	x	x	
MM 60 Optical Measurescope	MM	2-10	2-6	2-10	2-6	8	44	Z: custom F: 1X-100X	0.4 μm	x	x	x	x	x		linear glass scales	x		x	x	x	
V 12 B Profile Projector	OC	10	6	10	6		44	F: 5X-500X	0.1 μm	x	x				12	linear glass scales	x					
V 20 B Profile Projector	OC	10	6	10	6		66	F: 5X-100X	0.1 μm	x	x				20	linear glass scales	x					
V 24 B Profile Projector	OC	8.9	3.9	8.9	3.9		33	F: 5X-200X	0.1 μm	x	x				24	linear glass scales	x					
VM 40 Video Measurescope	MM	2-6	2-4	2-6	2-4	6	44	Z: custom F: 1X-100X	.4 μm	x	x	x	x	x		linear glass scales	x		x	x	x	
VM 60 Video Measurescope	MM	2-6	2-6	2-10	2-6	8	22	Z: custom F: 1X-100X	.4 μm	x	x	x	x	x		linear glass scales	x		x	x	x	
VM 150 Nexiv	VM	up to 12	up to 8	6-12	6-8	6	11-22	Z: 17X-1725X	.1 μm	x	x	x	x	x		linear	x	x	x	x	x	custom
VM 250 Nexiv	VM	10	8	10	8	6	22	Z: 17X-1725X	.1 μm	x	x	x	x	x		linear	x	x	x	x	x	
VM 500 Nexiv	VM	20	21	20	21	6	66	Z: 17X-1725X	.1 μm	x	x	x	x	x		linear glass scales	x	x	x	x	x	
VM 1000 Nexiv	VM	40	32	40	32	6	88	Z: 17X-1725X	.1 μm	x	x	x	x	x		linear glass scales		x	x	x	x	
VMH-300 Nexiv	VM	12	12	12	12	6	66	Z: 17X-1725X	.01 μm	x	x	x	x	x		dual linear high-res. glass scales		x	x	x	x	custom
VM 150 Veritas	VM	2-10	2-6	6-12	6-8	6	11-22	Z: 17X-1725X	.2 μm	x	x	x	x	x		linear glass scales	x	x	x	x	x	custom
VM 250 Veritas	VM	10	8	10	8	6	22	Z: 17X-1725X	.2 μm	x	x	x	x	x		linear glass scales	x	x	x	x	x	custom
VM 500 Veritas	VM	20	21	20	21	6	66	Z: 17X-1725X	.2 μm	x	x	x	x	x		linear glass scales	x	x	x	x	x	custom
Olympus America Inc. Ph. 800-446-5967 Fax 631-844-5111 www.olympusamerica.com																						
STM5-UM	VM/MM	15.7	5.9	5.9	2	3.9	20	Z: 50X-500X	0.1 μm		x					digital scale, Metronics		x	x	x	x	custom
Opti-Tech Scientific Inc. Ph. 416-321-9987 Fax 416-321-8712 www.opti-tech.on.ca																						
Vision Gauge	VM	4-24	4-24	2-24	2-24	0.5-6	25	Z: 10X-1,500X	50 μ"	x	x	x	x	x		all	x	x	x	x	x	incident
Optical Gaging Products Inc. Ph. 800-647-4243 Fax 716-544-0131 www.ogpnet.com																						
Avant Apex	VM/MM			4-12	4-12	4	22	F: 2.5X-25X	4 μ"	x	x	x	x	x				x	x	x	x	
Avant ATS	VM/MM			18-30	18-24	6	220	F: 4.0X-200X F: 2.5X-10.0X	20 μ"	x	x	x	x	x				x	x	x	x	
Avant ZIP 300	VM/MM			12	12	6	55	Z: 40X-200X F: 2.5X-10.0X	20 μ"	x	x	x	x	x				x	x	x	x	

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Avant ZIP 400/600	VM/MM	17.8	4.3	18-24	18	6	45-65	Z: 40X-200X F: 2.5X-10.0X	20 µ"	x	x	x		x	14	(2) 16 digit by 2 line LCD	x	x	x	x	x	
Basic Bench Contour Projector	OC	32	8	8	6	2	45	F: 10X-50X	40 µ"	x	x			x	30	(2) 16 digit by 2 line LCD	x					
OQ 30B Contour Projector	OC	32	8	15	10	3	550	F: 10X-100X	40 µ"	x	x			x	20	Di-Metric Plus geom. readout	x					
QL 20 Contour Projector	OC	32	8	15	9	3	550		40 µ"	x	x			x	30	Di-Metric Plus geom. readout	x					
QL 30 Contour Projector	OC		8	15	9	3	550		40 µ"	x	x			x			x					
SmartScope Flare	VM/MM			8	8	6	35	Z: 32X-280X	20 µ"	x		x		x		digital linear, micrometers	x	x	x	x	x	coaxial
SmartScope Flash	VM/MM			8	8	6	35	Z: 32X-280X	20 µ"	x		x		x		digital linear, micrometers	x	x	x	x	x	coaxial
SmartScope ZIP	VM/VM			8	8	3	35	Z: 40X-200X F: 0.5X-1.5X	20 µ"	x		x		x		digital linear, micrometers	x	x	x	x	x	coaxial
Top Bench Contour Projector	OC	17.8	4.3	250	150	2	25-55	F: 10X-100X	40 µ"	x	x			x	14	(2) 16 digit by 2 line LCD	x					
PPT VISION Ph. 952-996-9500 Fax 952-996-9501 www.pptvision.com																						
PPT861	VM	14	12	14	12	4	10	F: many	2.5 µm					x	14	Windows NT GUI		x	x		x	monochrome
Precision Measurement Co. Ph. 610-279-4242 Fax 610-279-5169 www.quickpage.com/P/premeas																						
Spectra	OC/VM	10-60	10-36	6-48	6-36	3-12	50-100	Z: 300X F: 10X-100X	.1-1µm	x	x	x		x	14	infrared; linear glass scales	x	x	x	x	x	monochrome
Quantum	OC/VM	10-60	10-36	6-48	6-36	3-12	50-100	Z: 300X F: 10X-100X	.1-1µm	x	x	x		x	14	linear glass scales	x	x	x	x	x	monochrome
Quality Calibration Service Inc. Ph. 414-256-8900 Fax 414-256-8911 www.qualitycalibration.com																						
Optek Video CMM	VM			24	18	6	50	Z: 6" F: 50X, 350X	1µm							monochrome; monochrome	x	x			x	
Questar Corp. Ph. 800-247-9607 Fax 215-862-0512 www.questar-corp.com																						
SZ90/SZ180/SZ182	VM/MM			4	4	2		Z: 5-position EFL F: avail.	1µm	x	x	x		x					x	x	x	coaxial
RMS	VM/MM			4	4	2	50	Z: 5-position EFL F: avail.	1µm	x	x	x		x		digital linear, micrometers	x	x	x	x	x	coaxial
QMI/QMI 100	VM/MM			4	4	2	50	Z: 5-position EFL F: avail.	1µm	x	x	x		x		digital linear, micrometers	x	x	x	x	x	coaxial
R & R Gage Co. Ph. 770-409-9801 Fax 770-409-9787 www.rrgage.com																						
J & L Acu-Gage	OC	6	8	10	12	6	125	F: 10X, 20X, 50X	1 µm	x				x	14	Metronics 2205 w/linear scales	x		x		x	
RAM Optical Instrumentation Ph. 877-764-6397 Fax 949-224-0550 www.ramoptical.com																						
DataStar	VM	14-18	12	6-9	6-9	8	66	Z: 12X-340X F: 0.5X-2X	0.25 µm	x	x			x		dual and single monitor	x	x	x	x	x	coaxial
OMIS II Series	VM/MM	14-21	11-14	8-12	4-6	8	50	Z: 30X-340X	0.5 µm	x	x			x		dual monitor	x		x	x	x	quad light
OMIS III Series	VM/MM	13-46	15-29	12-44	12-24	8	99	Z: 30X-340X	0.5 µm	x	x			x		dual monitor	x		x	x	x	quad light
Sprint	VM	13	9	6	3	5	30	Z: 30X-170X	0.5 µm	x	x			x		dual monitor, digital	x		x	x	x	quad light
S-T Industries Inc. Ph. 800-326-2039 Fax 507-375-4503 www.stindustries.com																						
1600 Series	OC	20	5	12-16	7	3	150	F: 5X-100X	1µm	x	x			x	6	Quadra Chek, geometric digital	x	x	x	x	x	quad & sector
2400 Series	OC	14-18	10	8-10	4	5	25	F: 5X-100X	1 µm	x	x			x	24	Quadra Chek, geometric digital	x	x	x	x	x	quad light
2450 Series	OC	24	5	12-16	8	3	200	F: 5X-100X	1µm	x	x			x	24	Quadra Chek, geometric digital	x	x	x	x	x	quad light

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Company/Product	Machine Type (Note 1)	Stage Size X (in.)	Stage Size Y (in.)	Stage Travel X (in.)	Stage Travel Y (in.)	Stage Travel Z (in.)	Stage Capacity (lbs.)	Lenses (Z=Zoom, F=Fixed)	Scale Resolution	Profile	Transmitted	TTL	Diascopic	External	Screen Dia. (in.) (for opt. comp.)	Display Readout	Manual	DCC or CNC	Top	Bottom	Ring	Other
Sony Precision Technology America Inc. Ph. 949-770-8400 Fax 888-910-7669 www.sonypt.com																						
2600/5600 Series	OC	35	8	12–24	9	3	500	F: 5X–100X	1μm	x				x	30	Quadra Chek, geometric digital	x					
3300 Series	OC	16	5	7–10	4	3	25	F: 5X–250X	2μm	x				x	14	Quadra Chek, geometric digital	x					
3650 Series	OC	21	5	12–16	5	3	100	F: 5X–250X	1μm	x				x	14	Quadra Chek, geometric digital	x					
4400 Series	OC	16	6	2–6	2	5	25	F: 5X–250X	2μm	x				x	14	Quadra Chek, geometric digital	x					
4600 Series	OC	14–18	10	8–12	4	5	25	F: 5X–250X	1μm	x				x	14	Quadra Chek, geometric digital	x					
8600 Series	VM	14–18	10	8–12	4	5	25	F: 30X–180X	1μm	x		x	x	x	14	Quadra Chek, geometric digital	x	x	x	x	x	
The L.S. Starrett Co. Ph. 770-590-7737 Fax 770-590-7511 starrett.com																						
YM40 Video CMM	VM	22	14.5	16	10	8	110	F: 1.6X–20X	0.5μm	x		x	x	x	14	Sony linear encoders	x	x	x	x	x	
YP20 Non-Contact 3-D Measuring System	VM	9	9	4	4	2	11	F: 50X–100X	0.1μm	x		x	x	x		Sony linear encoders	x	x	x	x	x	
Trigon Adcotech Ph. 510-657-9370 Fax 510-657-9377 www.trigonadcotech.com																						
HB350	OC	15	5	8	4		110	F:10X–100X		x				x	14	digital linear scales	x					
HB400	OC	17	5	10	6		180	F:10X–100X		x				x	16	digital linear scales	x					
HC800	OC	32	8	20	10		110	F:10X–100X		x				x	32	digital linear scales	x					
HF600	OC	25	9	12	8		110	F:10X–100X		x				x	24	digital linear scales	x					
HF750	OC	25	9	12	8		110	F:10X–100X		x				x	30	digital linear scales	x					
VB300	OC	11	7	6	2		22	F:10X–100X		x				x	12	micrometer; digital linear scales	x				x	
VB400	OC	16	9	8	4		22	F:10X–100X		x				x	16	micrometer; digital linear scales	x				x	
VF600	OC	16	9	8	4		22	F:10X–100X		x				x	24	micrometer; digital linear scales	x				x	
UBM Corp. Ph. 888-541-4826 Fax 408-541-0153 www.ubmusa.com																						
SMD 9000	VM	2	2					F:10X, 20X, 50X, 100X	60μm		x					single monitor, software		x				back light
Vision Engineering Inc. Ph. 800-644-7264 Fax 860-355-0712 www.visioneng.com																						
Nano Surf	MM	3.9	3.9	3.9	3.9	1.97	37.5	F:10X, 20X, 50X, 100X	5nm			x						x	x	x	x	back light
Dynascope Ultra	OC/MM	up to 8	up to 6	up to 8	up to 6	up to 2	50	F: up to 50X	1μm	x	x			x	4x6	Quadra Chek, digital scale	x				x	
Series 5 Dynascope	OC/MM	up to 16	up to 12	16	12	2	25	F: up to 1,000X	1μm	x	x			x	5x7	Quadra Chek, digital scale	x				x	
Workshop Dynascope	OC/MM	2–6	2–6	up to 6	up to 6	up to 2		F: up to 100X	2μm	x	x			x	4x6	Quadra Chek, digital scale	x				x	
Werth America Ph. 877-937-8426 Fax 716-667-2725 www.werthamerica.com																						
Inspector FQ Multisensor CMM	VM			6	16	8	150	Z: 10:1 F: 1X–50X	0.5μm	x	x	x	x	x	4x6	Quadra Chek, digital scale	x	x	x	x	x	sector lighting
Scope-Check Multisensor CMM	VM			8–16	6	6	150	Z: 10:1 F: 1X–50X	0.5μm	x	x	x	x	x		Quadra Chek, digital scale	x	x	x	x	x	sector lighting
Video-Check Multisensor CMM	VM			10–140	5–70	2–32	600	Z: 10:1 F: 0.2X–100X	0.1μm	x	x	x	x	x		Quadra Chek, digital scale	x	x	x	x	x	sector lighting

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www.davidsonoptronics.com

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Ph. 800-451-6922   Fax 714-641-0946
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Ph. 518-346-7136 Fax 518-346-4134
MSI distributes high-speed and high resolution vision products including linescan, 2-D and 3-D systems; sells cameras, lenses,laser sensors, fiber-optic lighting and machine-vision image-processing software; and provides automated inspection systems utilizing vision, laser and other noncontact technologies.
CheckerQuick Vision—A complete line of video-based, noncontact measuring equipment with unique features,configurations to suit customers applications and a wide range of capacities up to 60 in. x 60 in. Industrial Machine Vision System, high-speed, low-cost, easy to program, ruggedized for the factory floor, operates stand-alone without PC attached.
Sherlock Vision System—Frame grabber and PC-based vision solutions incorporating advanced image analysis software tools from ITI Sherlock.

Mycrona Inc.
14777 Keel St.
Plymouth, MI 48170
Ph. 734-453-5880 Fax 734-453-4076
www.mycrona.com
SIGNUM—A stand-alone video inspection system for general metrology applications; size ranges 12 x 12 x 6 in. through 24 x 24 x 16 in.,high-precision,Windows-NT-based, multisensor-capable.

N.W. Contract Inspection Inc.
3819 Superior Ridge Drive
Fort Wayne, IN 46808
Ph. 219-482-5473 Fax 219-482-9077
www.nwinspection.com
Full-service calibration, inspection and measuring facility. ISO 09002- and ISO/IEC Guide 25-certified. CMM dimensional inspection of parts, gages and fixtures for PAPPs and gage R&Rs. Calibration of gage blocks, thread gages, micrometers, calipers and more. CMM training and metrology consulting.

National Instruments
11500 N. Mopac Expressway
Austin, TX 78759
Ph. 800-433-3488 Fax 512-683-9300
www.ni.com

Navitar Inc.
200 Commerce Drive
Rochester, NY 14623
Ph. 800-828-6778 Fax 716-359-4999
www.navitar.com
Navitar designs and manufactures a complete line of high-quality optical inspection products. Zoom 6000 and TenX video microscope imaging systems are used in semiconductor manufacturing, noncon-

tact measurement, industrial inspection and medical industries.

Newport Corp.
1791 Deere Ave.
Irvine, CA 92606
Ph. 877-764-6397   Fax 949-224-0550
www.ramoptical.com
Manufacturer of precision noncontact dimensional measuring and inspection systems for quality control, process control and inspection applications. Industries served include plastics, medical manufacturing, automotive, communications, aerospace, metalworking, computer/components and semiconductor.

Nikon Inc.
1300 Walt Whitman Road
Melville, NY 11747
Ph. 631-547-8500   Fax 631-547-8518
www.nikonusa.com
Nikon Inc. is a manufacturer and distributor of optical inspection equipment. Products include stereo microscopes, autocollimators, optical comparators, toolmakers' microscopes and automated video-inspection systems.

Northern Digital Inc.
103 Randall Drive
Waterloo, ON N2V 1C5 Canada
Ph. 519-884-5142   Fax 519-884-5184
www.ndigital.com
Optotrak and Polaris 3-D motion measurement systems—These products provide unparalleled performance in a variety of applications such as animation, human motion research, robotics, digitizing for inspection and reverse engineering, aeronautics and a variety of medical-device tracking applications. NDI offers cost-effective measurement solutions to researchers and industries worldwide.

Omron Electronics
One E. Commerce Drive
Schaumburg, IL 60173
Ph. 800 556-6766   Fax 847-843-8087
www.info.omron.com
Omron manufactures a wide variety of automation systems and control components. Products include PCB relays, low-signal relays, SSRs, switches, photomicrosensors, PLCs, sensors, vision systems, temperature controllers, timers and counters. Award-winning vision sensors range from the very small and economical F-10 to the more sophisticated F150-3.

Operations Technology Inc. (OPTEK)
P.O. Box 408
Blairstown, NJ 07825
Ph. 908-362-6200   Fax 908-362-5966
www.optek.net

![ogp Optical Gaging Products Inc. A Quality Vision International Company]

Optical Gaging Products Inc.
850 Hudson Ave.
Rochester, NY 14621
Ph. 800-647-4243   Fax 716-544-0131
www.ogpnet.com
Avant Apex—Ultra-high-accuracy noncontact coordinate measuring system featuring 0.0001 mm resolution noncontact scales, high-accuracy fixed objectives, granite base and column, and high-resolution black-and-white camera.

Avant ATS—Video measuring system for measurement of large parts includes long travel stages, multisensor options, operator work station and Windows software.
Avant ZIP—High-speed floor model noncontact video measuring system designed for measuring a large volume of parts at one time. Supported by Windows-based software and wide range of accessories.
SmartScope Flare—Versatile benchtop measurement machine offers multi-sensor technology for noncontact coordinate measurement. Advanced image processing of video and laser data provide fast accurate measurements of virtually any part.
SmartScope Flash—Benchtop video-based metrology system features four intelligent illumination sources, Accu-Centric 12X zoom lens and OGP's exclusive 32-bit MeasureX metrology software. Multi-sensor capability with plug-and-play tough probe option.
SmartScope Quest—A coordinate measurement system that incorporates video, touch probe and laser sensors in a compact, benchtop platform. Quest's unique optical system uses fixed, telecentric objectives with zero distortion and high resolution.
SmartScope ZIP—Full-featured, noncontact benchtop coordinate measuring system featuring precision zoom optics, multiple illuminators and high-resolution video camera.

![Origin Technologies Corporation]

Origin Technologies Corp.
9238 Madison Blvd., Bldg. 1, Ste. 800
Madison, AL 35758
Ph. 256-461-1313   Fax 256-461-1390
www.origintech.com
Origin Technologies manufactures a hand-held, laser-based dimensional measurement system capable of identifying and analyzing surface features. Automatic measurements of gap, flush, step, angle, radius, pitting, wear, corrosion, fasteners and weld profiles are enabled through flexible software. Profiles and extracted values can be saved, retrieved and downloaded to a PC.

Penco Precision
P.O. Box 8105
Northfield, IL 60093
Ph. 847-446-3606   Fax 847-446-3645
Manufacturer's representative carrying optical and mechanical inspection equipment. Comparators, CMMs, microscopes, video systems, thread gages and hand tools are available.

Perceptron Inc.
47827 Halyard Drive
Plymouth, MI 48170
Ph. 800-333-7753   Fax 734-414-4700
www.perceptron.com
Perceptron is an industry leader in the data-collection, analysis, management and control software technologies required to put the information it produces to work controlling processes in real-time.
P-1000 vision system—Inline process measurement via laser cameras. The system computes real-time dimensional vari-

ation in the manufacturing process.
IPNet—PC-based system supports Perceptron's line of digital sensors. The system allows collection of in-process measurement information at any point in the build or assembly process and the ability to monitor, analyze and distribute that data.

Phoenix Imaging
19045 Farmington Road
Livonia, MI 48152
Ph. 248-476-4200   Fax 248-476-5705
www.phoeniximaging.com
Phoenix Imaging carries a complete line of accessories including cables, cameras, fixtures and lenses and manufactures a complete line of more than 200 fluorescent, halogen and LED lighting products.

PPT VISION Inc.
12988 Valley View Road
Eden Prairie, MN 55344
Ph. 952-996-9500   Fax 952-996-9501
www.pptvision.com
PPT VISION Inc. designs, manufactures, markets and integrates 2-D and 3-D machine vision-based automated inspection systems for a broad range of industry categories, including manufacturers of automotive and electronic components, semiconductors, medical devices, pharmaceuticals, consumer goods and plastics. These flexible turnkey systems are sold throughout the Americas, Europe and Asia to major manufacturing companies and system integrators representing a broad range of industry categories.

Precision Tool Distributors Inc.
553 Weddell Drive
Sunnyvale, CA 94089
Ph. 888-747-1254   Fax 408-747-0886
www.pretool.com
Specialists in dimensional gaging and inspection since 1963. Their 3,000-square-foot showroom features everything in inspection from calipers to CMMs. Services include a fully equipped contract inspection lab featuring Zeiss high-accuracy CMMs and video-based optical measurement systems.

QA Productivity Systems
236 Alpine Drive
Rochester, NY 14618
Ph. 716-381-9735   Fax 716-381-8317
A manufacturer's representative organization dealing with dimensional-measurement equipment. They specialize in vision, multiple-sensor CMM technology, CMMs, borescopes, fiberscopes, light sources, rotary tables, concentricity gages, measuring lasers, alignment lasers, lasers for calibration and laser micrometers. Also the manufacturer of the Perform-A-Check system for the calibration of CMMs.

Quality Control Solutions Inc.
43339 Business Park Drive, No. 101
Temecula, CA 92590
Ph. 888-355-7274   Fax 909-676-8970
www.qc-solutions.com
SEEBReZ—video noncontact measurement and inspection system can be used as a manual, motorized or fully automatic CNC. Full XYZ, submicron benchtop system.

Questar Corp.
6204 Ingham Road
New Hope, PA 18938

Ph. 800-247-9607   Fax 215-862-0512
www.questar-corp.com

R.K.B. Opto-Electronics Inc.
6677 Moore Road
Syracuse, NY 13211
Ph. 800-513-3945   Fax 315-455-8216
www.rkbopto.com

![ROI Newport Corporation]

RAM Optical Instrumentation
1791 Deere Ave.
Irvine, CA 92606
Ph. 877-764-6397   Fax 949-224-0550
www.ramoptical.com
RAM Optical Instrumentation, a Newport Corp. company, is a leader in the vision metrology industry. With more than 20 years of experience in the design and manufacture of video-based measurement and inspection systems, RAM Optical systems are used throughout the world in a wide variety of both quantitative and qualitative analysis areas, including assembly and production, in-process inspection, quality control laboratories, automated production, receiving inspection, training and material, and process review.

Redlake Imaging Corp.
18450 Technology Drive, Ste. A
Morgan Hill, CA 95037
Ph. 800-453-1223   Fax 408-778-6256
www.redlake.com
Redlake is the manufacturer of the MotionScope product lines of portable, easy-to-use, high-speed digital cameras designed to help troubleshoot high-speed canning, bottling, labeling and packaging problems. Engineers record the high-speed event and play back the images in slow motion, enabling them to see, analyze and resolve the problem. Models include self-contained portable systems with image acquisition rates up to 8,000 fps. Cameras are available as PC peripherals and are Ethernet connected.

Retina Systems Inc.
146 Day St.
Seymour, CT 06483
Ph. 800-966-1311   Fax 203-881-1494
www.retinasystems.com
Retina Systems manufactures laser and vision inspection systems for 100-percent sorting, gaging and process control for fastener, bearing, rivet, molding, medical, electronics and communications industries. Inline, online and stand-alone turnkey system with standard modules or custom designs utilizing state-of-the-art technology.

Riegl USA
7041 Grand National Drive, Ste. 272
Orlando, FL 32819
Ph. 407-248-9927   Fax 408-248-2636
www.rieglusa.com

RVSI Acuity CiMatrix
5 Shawmut Road
Canton, MA 02021
Ph. 800-646-6664   Fax 781-828-8942
www.rvsi.com
RVSI Acuity CiMatrix, the inventor of Data Matrix symbology and Code 128, is a world leader in supplying machine vision systems, bar code and advanced 2-

D symbology readers for manufacturing and distribution environments.

S-T Industries Inc.

301 Armstrong Blvd. N.

St. James, MN 56081

Ph. 800-326-2039   Fax 507-375-4503

www.stindustries.com

S-T is a manufacturer of high-precision measuring instruments and optical comparators and video-inspection systems under the brand name Scherr-Tumico. The company also provides custom-made measuring instruments.

8600/8800 vision system—30X-180X zoom lens, color or black-and-white camera and monitor, 4 in. x 8 in. or 4 in. x 12 in. travel stages, CNC systems optional.

Servo-Robot Inc.

635 Clairevue Blvd. W.

Saint-Bruno, PQ J3V 6B2 Canada

Ph. 450-653-7868   Fax 450-653-7869

www.servorobot.com

Servo-Robot Inc. manufactures 3-D laser-vision systems for guidance and control of robots in flexible gaging and welding automation. SRI provides an interface to articulated robots to perform 3-D joint tracking, quality control and adaptive control of process parameters.

Sony Precision Technology America Inc.

20381 Hermana Circle

Lake Forest, CA 92630

Ph. 949-770-8400   Fax 888-910-7669

www.sonypt.com

YM40—Combines enhanced measuring capabilities and user-friendly software for precise zero-force video inspection of electronic parts and plastic molds.

YF10—High-speed, high-accuracy noncontact video inspection system.

YP20/21—Noncontact 3-D measuring system capable of high-accuracy inspection with ease of operation,provided as standard with microscope functions.

The L.S. Starrett Co.

121 Crescent St.

Athol, MA 01331

Ph. 978-249-3551   Fax 978-249-8495

www.starrett.com

Starrett manufactures a complete line of precision measuring tools and equipment. Their more than 5,000 products include gages of all types:micrometers,indicators, calipers, height measurement, gage blocks/standards, granite surface plates, coordinate measuring machines, optical measuring projectors and vision systems.

Stenning Instruments Inc.

604 Via Del Cerro

Camarillo, CA 93010

Ph. 805-484-4996   Fax 805-484-5337

Manufacturers of weld-monitoring camera systems for viewing welding operations from remote locations,providing push-button,motorized control over all lens functions and filter density. Miniature pan and tilt heads. Liquid lightguides for transmission of UV, visible and near-infrared light.

Techniquip

191 Wright Brothers Ave.

Livermore, ON 94550

Ph. 888-414-0789   Fax 925-447-2201

www.techniquip.com

Complete line of fiberoptic and fluorescent illuminators, cross-hair generators,digital video calipers, light guides, annular light rings and video inspection software.

Trigon Adcotech

41332 Christy St.

Fremont, CA 94538

Ph. 510-657-9370   Fax 510-657-9377

www.trigonadcotech.com

Trigon Adcotech manufactures of through-hole and surface-mount component handling modules and systems. *SMD 9000*—Automated inspection system for surface-mount devices.

Trumeter Co. Inc.

1020 N.W. Sixth St.

Deerfield Beach, FL 33442

Ph. 800-537-2261   Fax 954-725-5599

www.trumeter.com

The world's foremost manufacturer of length-measuring systems and equipment for the textile, carpet,automotive, paper, and wire and cable industries. Innovative manufacturer of electronic componentry for OEM and custom applications. Trumeter also provides distance measuring wheels, levels, tapes and laser devices.

View Engineering Inc.

1650 N. Voyager Ave.

Simi Valley, CA 93063

Ph. 805-578-5000   Fax 805-578-5249

www.vieweng.com

Voyager Series—Automated, noncontact,vision-based, 3-D measurement for use as a key component of quality control in diverse industries.

Vision Components

478 Putnam Ave., Ste. 2

Cambridge, MA 02139

Ph. 617-492-1252   Fax 617-492-1252

www.vision-components.de

The VC Series of industrial "smart" cameras are complete machine-vision systems that include up to 8 MB of RAM,2 MB of Flash EPROM and a powerful DSP. The cameras feature optically isolated I/O (Four 12–24V inputs and four 150 mA outputs). Color, progressive-scan and megapixel models are available.

Vision Engineering Inc.

570 Danbury Road

New Milford, CT 06776

Ph. 800-644-7264   Fax 860-355-0712

www.visioneng.com

Patented noncontact measurement Dynascopes offer the comfortable viewing of optical comparators combined with the high resolution of toolmakers' microscopes. Available in two- or three-axis configurations, the units can be optimized as you select from a variety of magnification,illumination and stage sizes to meet your accuracy and repeatability requirements.

Vision Intelligence Products Inc.

80 Broadway

Cresskill, NJ 07626

Ph. 800-522-3842   Fax 201-567-7470

These are dedicated machine-vision systems with part-family flexibility. The microprocessor-based systems are multi-camera capable. Signals for activation of devices and signals are provided. Systems are SPC-capable and have RS-232 output. Complete systems include fixturing and parts feeder capability. Motion control,lighting, cameras lenses and image processing are all provided.

Vision Systems International

74 Sutphin Pines

Yardley, PA 19067

Ph. 215-736-0994   Fax 215-295-4718

www.vision1.com/VSI

Since 1984, Vision Systems International has been operating as an independent consulting company specializing in the fields of machine vision, imaging, electro-optics, intelligent sensors and nondestructive evaluation technologies. Services include application engineering as well as marketing and new business development.

Volpi Manufacturing USA

5 Commerce Way

Auburn, NY 13021

Ph. 800-688-6574   Fax 315-255-1202

www.volpiusa.com

Optical inspection instruments and illumination products include borescopes, fiberscopes, video microprobes,light sources, fiber-optic illumination and LED illumination.

Werth America Inc.

40 Centre Drive

Orchard Park, NY 14127

Ph. 877-937-8426   Fax 716-667-2725

www.werthamerica.com

Inspector FQ—A 2-D/3-D CNC high-speed video/multisensor CMM. Range: X = 400–3,500 mm, Y = 400–1,750 mm, Z = 200–600 mm. Accuracies to E2 = 1.5 + L/500 μm. Cooled linear motor drives up to 10 moves and measurements/sec. Supports all Renishaw, dual cameras.

Inspector V—A 3-D CNC vertical format video/multi sensor CMM. Range:X = 400–800 mm,Y = 300 mm, Z = 150 mm. Accuracy to E2 = 3.75 + L/200μm. Supports all Renishaw systems, 4–5 axis, Werth Fiber Probe. Ideal for milling cutters/hobs,cam/crankshaft and general shaft applications.

Scope-Check—A 2-D/3-D CNC video/multisensor CMM. Range: X = 200–400 mm, Y = 150 mm, Z = 150 mm. Accuracy:E1 = E2 = 3.75 + L/100 μm. Winwerth measurement software. Options: all Renishaw touch probes. *Video-Check*—A 2-D/3-D CNC video/multisensor CMM. Range: X = 250–3,500 mm, Y = 125–1,750 mm, Z = 200–600 mm. Accuracies to E2 = 0.9 + L/500 μm. Resolutions to 10 nanometers. Options: dual camera, all Renishaw systems, 4–5 axis, Werth Fibre Probe.

Xiris Automation Inc.

1016 Sutton Drive, Unit C8

Burlington, ON L7L 6B8 Canada

Ph. 905-331-6660   Fax 905-331-6661

www.xiris.com

MediaSense product line includes inspection equipment specific to the media industry, including identification code readers for CDs and DVDs,a disc orientation system,a jewel box verifier, and a printed-graphics inspection system.

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