

technologia badań
wizualnych

Everest

Polska



**Waygate
Technologies**

a Baker Hughes business

Mentor Visual iQ VideoProbe™

Intelligent inspection solutions.



More precise and efficient inspections are now possible with Waygate Technologies' Mentor Visual iQ VideoProbe. Driven by advanced analytics to inspect in entirely new ways, the more intelligent Mentor Visual iQ leverages computer vision and machine learning to increase data quality whilst reducing inspection times.

Unbeatable Clarity with TrueSight™

- Crystal clear live video and still images in high definition (HD)
- Unlocks the power of digital zoom on device with new 1.2 mega pixel image sensor
- Blends high resolution image and precision optics with a powerful suite of proprietary image transformation functions

Intuitive Design

- Portable, lightweight, rugged, and versatile
- QuickChange™ probes with optical tip adaptors
- Integrated WiFi and Bluetooth
- On-screen keyboard
- Powered by high-capacity, rechargeable lithium ion batteries

Real3D™ Measurement for Confident Decisions

- Most advanced 3D capabilities for more precise measurement from increased distances
- 3D Phase and Stereo Measurement with fully surfaced Point Cloud
- Real time cursor adjustment in the fully surfaced Point Cloud
- Generate and measure larger areas of the inspected asset with 3D Stitching

Enhanced Efficiency

- Improve consistency and reliability of inspection with assisted defect recognition Analytics
- Automate repetitive tasks with Blade Counter
- Menu Directed Inspection (MDI) software that guides inspectors through the inspection process, intelligently names files and tags files, and creates inspection reports
- Specialty probes: LongSteer™ 2.2mm USB probe, working channel, UV light, and borescope adaptor



Choose the right tool for your inspection job.

Mentor Visual iQ VideoProbe is available in three customized platform configurations to meet your inspection needs across a variety of industries and applications.



Mentor Visual iQ Inspect
Excellent quality and connectivity at a value price



Mentor Visual iQ Touch
Improve productivity with QuickChange probes and touchscreen



Mentor Visual iQ Analyze
Our most capable VideoProbe with bundled 3D Measurement and Probability of Detection SW for extreme image quality

System	Inspect	Touch	Analyze
Capability			
High definition resolution	Y*	Y	Y
IP65 / MIL-STD-810 field durability and ruggedness	Y	Y	Y
Connectivity • Wi-Fi/Bluetooth • Network drive mapping	Y	Y	Y
PC Re-measurement with Inspection Manager	Y	Y	Y
Internal memory	16 GB	32 GB	32 GB
QuickChange probes	Y*	Y	Y
Compatible with Custom Probes, i.e., LongSteer, UV, 2.2mm USB, etc.	Y*	Y	Y
Menu Directed Inspection image management and reporting	Upgrade	Y	Y
Touchscreen interface	Upgrade	Y	Y
Real3D • 3D Phase Measurement with Fully Surfaced Point Cloud • 3D Stereo Measurement with Fully Surfaced Point Cloud • Projected plane measurement • Area depth profile measurement • Blade Tip Clearance auto measure	Upgrade	Upgrade	Y
Measurement • Stereo Measurement • Comparison Measurement	Upgrade Y	Upgrade Y	Y
Probability of Detection Suite (POD) • Variable High Dynamic Range (HDR) Images • Adaptive Noise Reduction (ANR) • Distortion Correction for Wide FOV tips • Image Transform Presets • Dark Boost image settings	Upgrade	Upgrade	Y
InspectionWorks Connect • Global • Local and Control	Upgrade Y	Upgrade Y	Upgrade Y
Turning Tool Support	Upgrade	Upgrade	Y
USB Video-In	Y	Y	Y
Always On DVR	Y	Y	Y
90 Day Free Trial of all SW features	Y	Y	Y
Image Rotation	Y	Y	Y
3D Image Stitching	Upgrade	Upgrade	Y**
Live Analytic: Blade Counter	Upgrade	Upgrade	Upgrade
Still Analytic: LM2500 assist-S, Aiir Lite Rotate, Aiir Lite Combutor	Upgrade	Upgrade	Upgrade

* Requires interchangeable Inspect mode

** Requires 3D phased measurement

The VideoProbe of the future.

The Mentor Visual iQ is changing the way remote visual inspections are being performed. Leveraging artificial intelligence and cloud-based digital tools to help improve productivity, accuracy, and reliability of inspection data..

Powerful analytics

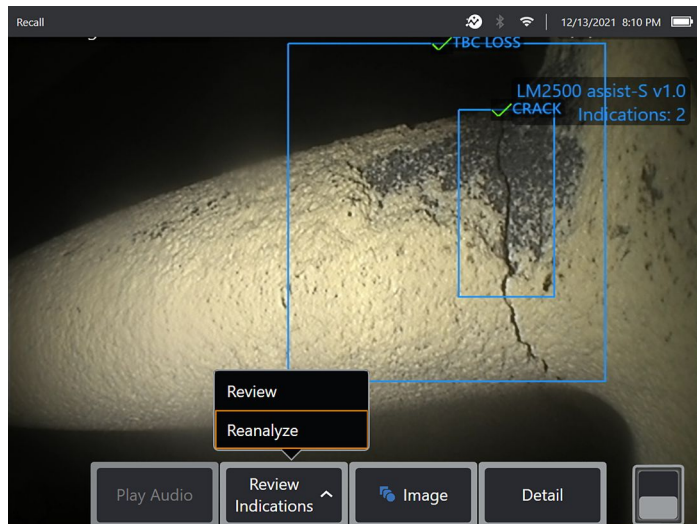
Artificial intelligence is being utilized across industries and functions, the Mentor Visual iQ is designed to enable a user to leverage analytical models from multiple sources.

- Waygate Technologies Analytics. LM2500 assist-S and Blade Counter are analytics developed to improve reliability and data integrity
- Third Party Partner Analytics. Available directly on the Mentor Visual iQ, users can leverage Aiir Innovations' aviation commercial engine models for defect detection
- Third Party Private Analytics. For customers developing their own analytics, the Mentor Visual iQ enables deployment to a global team

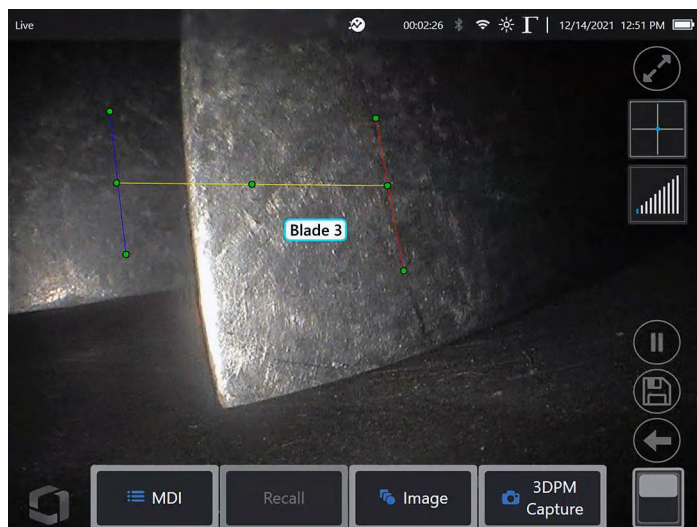
Datasheets are available for each analytic to guide users through applicability and operating procedures.

When and where you need them

The Mentor Visual iQ connects directly to the InspectionWorks Store to provide access to workflows and reference libraries. Available to all is the Public store which contains manuals, analytic data sheets, MDI templates and other reference materials. The Private store is available to InspectionWorks subscribers providing a secure repository for custom MDI workflows, analytics, reference documents, or any other resources your team may need to access and download on to their Mentor Visual iQ.



In this example image, the LM2500 assist-S analytic correctly identifies and characterizes crack and TBC loss.



The Blade Counter analytic showing entry, exit lines and Blade number.

Technical Specifications – Handset

Operating Temperature

Tip	-25°C to 100°C (-13°F to 212°F). Reduced articulation below 0°C (32°F)
System	-25° to 46°C (-13°F to 115°F). LCD may require warm-up period below 0°C (32°F)
Storage Temperature	-25° to 60°C (-13°F to 140°F)
Relative Humidity	95% max, non-condensing
Waterproof	Insertion tube and tip to 14.7 psi (1 bar, 10.2 m of H ₂ O, 33.5 ft of H ₂ O)

Camera

Diameter Probe	4.0 mm (0.16"), 6.1 mm (0.24"), 6.2mm (0.24"), 8.4 mm (0.33")
Image Sensor	1/6" Color Super HAD CCD camera (6.1, 8.4mm), 1/10" Color Super HAD CCD camera (3.9mm, 4.0mm, 6.2mm)
Pixel Count	SD 3.9, 4.0, 6.1, 6.2, 8.4 mm – 440k pixels HD 6.1, 8.4 mm – 1200k pixels
Housing	Titanium

System

System Dimensions	17.1 x 19.7 x 38.1 cm (6.75 x 7.75 x 15")
Case Dimensions	Small carry-on case 54.9x 34.6x 23.6 cm (21.61x13.62x29") Medium size dual probe case 55.8 x 33.0 x 63.5 cm (22 x 13 x 25") Large workstation case 57.2 x 56.3 x 41.2 cm (22.52 x 22.16 x 16.22")
System Weight	In small case with contents: 10.2 kg (22.4 lbs). In medium case with contents: 10.9 kg (24 lbs). In large case with contents: 19.6 kg (43.2 lbs) Out of Case: 6120 system – 3.0 kg (6.7 lbs). 61100 system – 4.0 kg (8.7 lbs)
Construction	Magnesium and Polycarbonate housing with integrated elastomeric bumpers
LCD Monitor	Integrated (6.5") active matrix XGA color LCD, daylight readable display, with optically bonded, multipoint capacitive Dragontrail™ touchscreen (Pinch and zoom gesture support, on-screen radio and slider button activation)
Joystick Control	360° All-Way® tip articulation, menu access, and navigation
Button Set	Access user functions, measurement, and digital functions
Audio	Compatible with bluetooth headset/microphone
Internal Memory	16 GB (Inspect model) and 32 GB (Touch and Analyze model) internal SSD for user data storage
Data I/O Ports	Two USB 3.0 host 'A' ports, one USB 3.0 client micro 'B' port
Video Out	DisplayPort
Brightness Control	Auto and Variable
Illumination Type	White LED
Long Exposure	Auto – up to 16 seconds
White Balance	Factory default or user defined

Power Supply

Lithium Ion Battery	10.8 V (nominal), 73 Wh, 6.8 Ah, two-hour typical run time
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Current

AC	100–240 VAC, 50–60 Hz, <1.5 A RMS
DC	18 V, 3.34 A

Standards Compliance and Classifications

MIL-STD-810G	United States Department of Defense Environment Tests Sections 501.5, 502.5, 506.5, 507.5, 509.5, 510.5, 511.5, 514.6, 516.6, 521.3
MIL-STD-461G	U.S. Department of Defense – Electromagnetic Compatibility with RE102, and RS103 – ABOVE DECK
Standards Compliance	Group 1 Class A; EN61326-1, IEC CB Scheme, UL/EN/CSA-C22.2 61010-1, IEC 62133, UN/DOT T1-T8, EU RoHS 2, EU RED Directive, ISTA 2G
IP Rating	IP65 (assembled), IP55 (disassembled)

Technical Specifications – Handset

Software

Operating System	Embedded multi-tasking operating system
User Interface	Menu-driven and soft button operation; menu navigation using either touchscreen or joystick
File Manager	Embedded file manager supports the following operation on files and folders: copy, cut, paste, create, rename, delete, filter, sort, and image recall. USB and internal flash storage
Audio Data	PC Compatible ACC (.M4A file) format
Image Control	Brightness, Long Exposure, Invert, Inverse+, Single View, Illumination, Color Saturation Control, Distortion Correction, Adaptive Noise Reduction (ANR), High Dynamic Range (HDR) imaging, Dark Boost, and Image Transform Presets
Digital Zoom	Continuous (5x)
Image Formats	Bitmap (.BMP), JPEG (.JPG)
Video Format	MPEG4 AVC/H.264 (.MP4 file)
Text Annotation	Built-in on screen text overlay generator with selectable font size
Graphic Annotation	User placement of arrows
Articulation Control	User-selectable steer and Steer-and-Stay* articulation; tip "Home" return to neutral forward-tip orientation
Software Updates	Field upgradeable via upgradeable WiFi or USB ThumbDrive®
Languages	English, Spanish, French, German, Italian, Russian, Japanese, Korean, Portuguese, Chinese, Polish, Hungarian, Finnish and Swedish
Application Software	Menu Directed Inspection* (MDI) software digitally guides inspectors through the inspection process, intelligently names files and tags files and creates Microsoft® Word and PDF compatible inspection reports (MDI included on Analyze and Touch models, available as upgrade to Inspect model)

Technical Specifications – Probes and Tips

Probe Measurements

Diameter	Length
2.2 mm (0.086")	1.0 m (3.2 ft.)
4.0 mm (0.15")	2.0, 3.0 m (6.6, 9.8 ft.)
6.1 mm (0.24") [†]	2.0, 3.0, 3.5, 4.5, 6.0, 10.0 m (6.6, 9.8, 14.8, 19.7, 32.8 ft.)
6.2 mm (.24")	3.2, 3.5 m (10.5, 11.5 ft.)
8.4 mm (0.33")	2.0, 3.0, 4.5, 6.0, 10.0 m (6.6, 9.8, 14.8, 19.7, 32.8 ft.)

Longer lengths up to 30 m are available.
Contact your sales representative for details.

Tip Articulation

Insertion Tube Length	Articulation
2 m – 4.5 m	Up/Down 160° min, Left/Right 160° min
6 m – 10 m	Up/Down 140° min, Left/Right 140° min

Note: Typical articulation exceeds minimum specifications.

Mentor Visual IQ 4.0 mm tips

Part No.	Color	FOV (deg)	DOF mm	(in)
Forward View				
T4080FF**	None	80	35-inf	(1.38-inf)
T40115FN	Black	115	4-inf	(.16-inf)

Side View

T40115SN	Red	115	1-30	(.04-1.18)
T40120SF	Blue	120	6-inf	(.24-inf)

StereoProbe™ Measurement^{††}

TM405555FG ^{††}	Black	55/55-FWD	5-inf	(.20-inf)
TM405555SG ^{††}	Blue	55/55-SIDE	4-inf	(.16-inf)

** Indicates tip with maximum brightness

[†] Indicates HD optimized

^{††} Stereo and 3D Stereo use same lenses

Mentor Visual iQ 6.1 mm tips

Part No.	Color	FOV (deg)	DOF mm	(in)
Forward View				
T6I50FF	None	50	50-inf	(2.36-inf)
XLG3T6I50FG	White	50	12-200	(.47-7.87)
XLG3T6I120FG	Black	120	5-120	(.20-4.72)
XLG3T6I80FN	Orange	80	3-20	(.12-.79)
XLG3T6I90FF	Yellow	90	20-inf	(.79-inf)
XLG3T6I50FB	Purple	50 (45 DOV)	12-80	(.47-3.15)
T6I65FF**†	Orange and Blue	65	65-inf	(2.56-inf)
T6I120FF	Gray	120	20-inf	.79"-inf

Side View

XLG3T6I50SF	Brown	50	45-inf	(1.77-inf)
XLG3T6I50SG	Green	50	9-160	(.35-6.30)
XLG3T6I120SG	Blue	120	4-100	(.16-3.94)
XLG3T6I80SN	Red	80	1-20	(.04-.79)

3D Phase Measurement

XL4TM6I105FG (forward version)†	Black	105	8-250	(.31-9.84)
XL4TM6I105SG (side version)†	Blue	105	7-250	(.27-9.84)
XL4TM6I105FN-8651	Orange	105	3-120	(.12-4.72)
XL4TM6I105SF (side version)†	Green	105	15-inf	0.59-inf

StereoProbe Measurement

XLG3TM6I6060FG ^{TT}	Black	60/60-FWD	4-80	(.16-3.15)
XLG3TM6I5050SG ^{TT}	Blue	50/50-SIDE	2-50	(0.8-1.97)

Mentor Visual iQ 6.2 mm tips

Tip View	Color	FOV (deg)	DOF mm	(in)
Standard Tip Optics				
Forward View				
PXT6240FF	None	40	100 - inf	3.94-inf
PXT62120FF	Yellow	120	25 - inf	0.98-inf
PXT62120FN	Black	120	4-190	0.16-7.48

Side View

PXT62120SN	Blue	120	5-inf	0.20-inf
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StereoProbe Measurement Tip

Forward View

PXTM6260FG	Black	60/60	4-80	(0.16-3.15)
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Side View

PXTM6260SG	Blue	60/60	4-80	(0.16-3.15)
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Mentor Visual iQ 8.4 mm tips

Part No.	Color	FOV (deg)	DOF mm	(in)
Forward View				
XLG3T8440FF**	None	40	250-inf	(9.84-inf)
XLG3T8440FG	White	40	80-500	(3.15-19.68)
XLG3T8480FG	Yellow	80	25-500	(.98-19.68)
T84I20FF	Orange and Blue	120	20-inf	(0.79-inf)
XLG3T84I20FN	Black	120	5-200	(.20-7.87)

Side View

XLG3T8440SF**	Brown	40	250-inf	(9.84-inf)
XLG3T8480SG	Green	80	25-500	(.98-19.68)
XLG3T84I20SN	Blue	120	4-200	(.16-7.87)

StereoProbe Measurement^{TT}

XLG3TM846060FG ^{TT}	Black	60/60-FWD	4-50	(.16-1.97)
XLG3TM846060SG	Blue	60/60-SIDE	4-50	(.16-1.97)

**Indicates tip with maximum brightness

† Indicates HD optimized

^{TT} Stereo and 3D Stereo use same lenses

Technical Specification – Analytics

Analytic Part No.	Description	Applicability
MVIQ-BLADECOUNT*	Live Analytic: detects, tracks and trigger blade edges moving in real time	Gas turbine blades (compressor and turbine)
MVIQ-AIRADRS*	Still ADR Analytic (x2): automatically detect defects within aerospace gas turbines	Gas turbine blades (compressor and turbine) Combustion and TBC coated HPT components CF6, CFM56 5A/B/C, CFM56 7B, V2500, PW 1100, GEnx, CF34, GE90, LEPA, PW 2000, Trent 700, Trent 1000
MVIQ-LM2500ADRS*	Still ADR Analytic (x2): automatically detect defects within LM2500 gas turbine	Gas turbine blades (compressor and turbine) Combustion and TBC coated HPT components LM2500

*Refer to analytic datasheet for more information