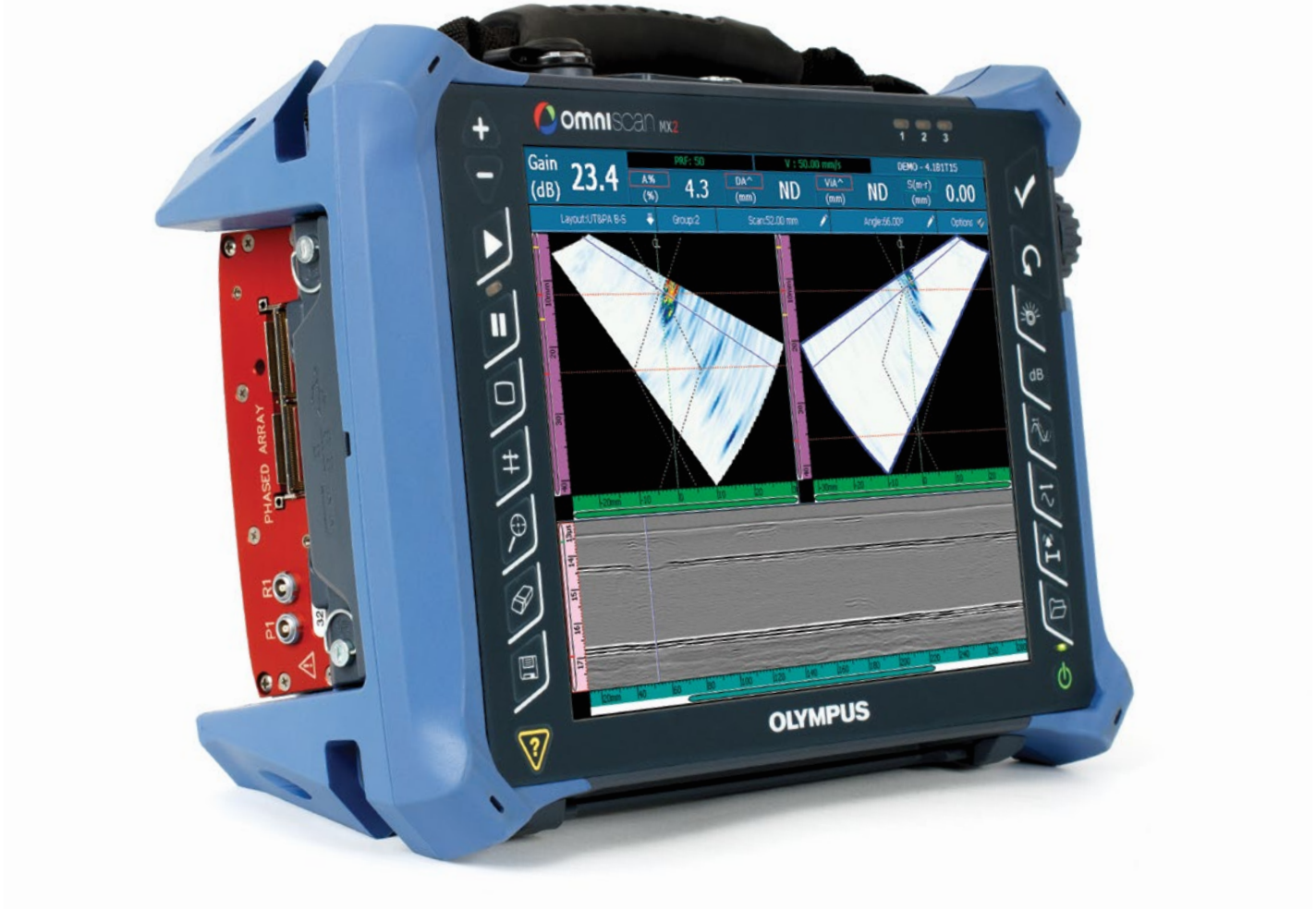
OLYMPUS

Ultrasonic Flaw Detector

omniscan MX2

OmniScan MX2

The Standard in Phased Array, Redefined



- Large, 10.4 in. (26.4 cm) touch screen
- Multigroup capability
- Two-axis encoding and data archiving capacity
- Modular platform
- Complete evolving range of modules

You'll see…

The result of over 10 years of proven leadership in modular NDT test platforms, the OmniScan MX has been the most successful portable and modular phased array test instrument produced by Olympus to date, with thousands of units in use throughout the world.

Building on a Solid Basis

This second generation OmniScan MX2 increases testing efficiency, ensuring superior, advanced AUT application performance with faster setups, test cycles, and reporting, in addition to universal compatibility with several phased array and ultrasound modules. Designed for NDT experts, this high-end, scalable platform delivers true next-generation NDT performance.

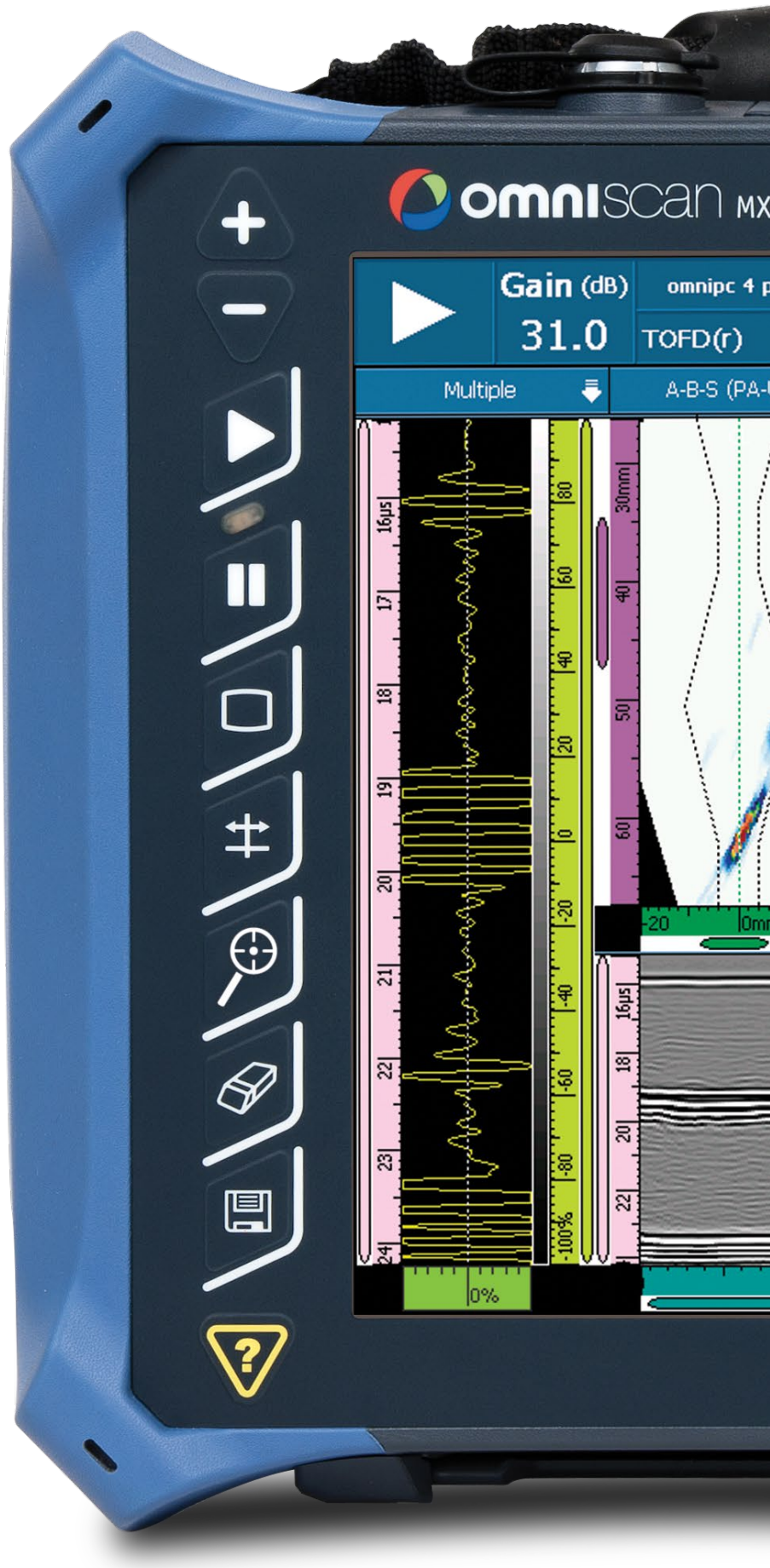
The OmniScan MX2 offers a high acquisition rate and new powerful software features for efficient manual and automated inspection performance—all in a portable, modular instrument.

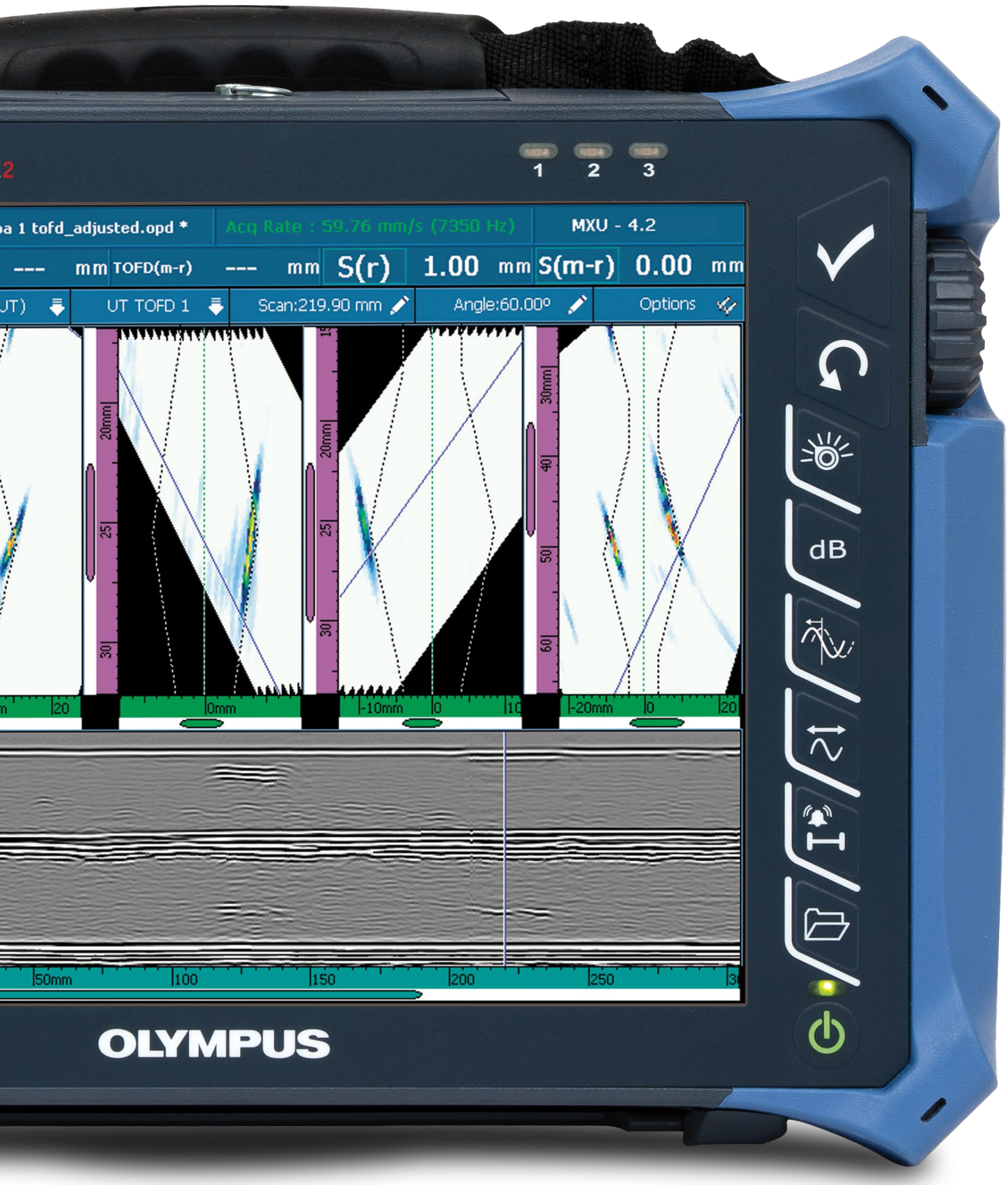
Faster Is Better!

Powerstart your day with the OmniScan MX2. The OmniScan MX2 simplifies and speeds up the setup process with its intuitive step-by-step Wizard, so you can start testing quickly. Featuring the industry-standard phased array user interface with faster-than-ever performance, a bigger and brighter 10.4 in. (26.4 cm) screen, new and unique intuitive touch-screen capabilities, and faster data transfer, the MX2 enables you to get to your next inspection quicker.

More than an Instrument —A Solution Provider

The OmniScan MX2 is an important part of your inspection solution, and can be combined with other critical components to form a complete inspection system. Olympus offers a complete product range that includes phased array probes, scanners, analysis software, and accessories, all of which are integrated and packaged into rapidly deployable, application-specific solutions for a quick return on your investment. In addition, Olympus offers a high-quality global calibration and repair service, backed by a team of phased array application experts to ensure that you get the support you need.





Life-Size OmniScan MX2

Modular Instrument

A Platform that Evolves as your Needs Grow

Designed to secure both your current and future phased array investments, the OmniScan MX2 is compatible with several different Olympus modules. You can be confident that you will get the most out of your investment as specifications will continue to evolve with your needs through constant software updates.

State-of-the-Art PA2 and UT2 Modules

As a world leader in phased array technology, Olympus has released a new line of modules compatible with MX2 instrument.

PA2

The new phased array offering—led by the innovative PA2 modules, features multiple improvements, such as:

Best Phased Array and TOFD Signal Quality Ever

- Better signal-to-noise ratio.
- More powerful pulsers.
- 64 pure gray tone.

More Multigroup Capabilities

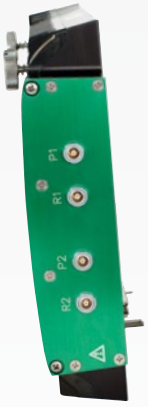
- Ability to use PA and UT channels simultaneously.

General Hardware Improvements

- Higher operating-temperature endurance (up to 45 °C).
- New OmniScan probe connector with quick latch system.
- Completely sealed fanless design.
- Extended autonomy on batteries.

UT2

The new conventional ultrasound module features the same UT-channel technology as the PA2 modules, but offers twice as many channels.



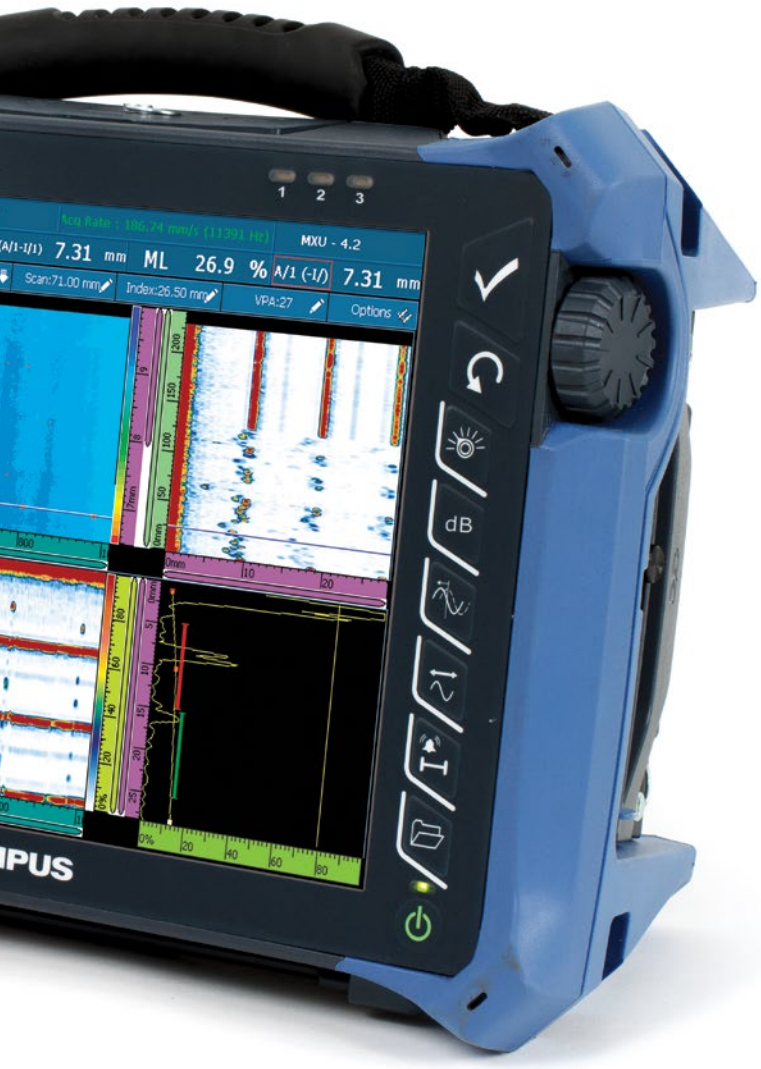
2 ch. UT2

PA2 16:64
PA2 16:128

PA2 32:128
PA2 32:128PR

OmniScan MX2 Equals Flexibility

Thanks to NDT SetupBuilder and OmniPC companion software, the OmniScan MX2 can be dedicated exclusively to calibration and acquisition tasks or, if preferred, can perform all the steps of an inspection, directly on its large, user-friendly touch screen.



Setup

The most efficient way to create a setup is to perform the simulation in NDT SetupBuilder, and imported directly, via SD card or USB key, to the OmniScan. Then, only a few basic operations are required in the instrument, such as setting the gate and range, before acquisition can begin. It is also very easy to create a setup right in the OmniScan, thanks to the following features:

- Automatic probe recognition.
- Intuitive wizards to guide the user through every step of the setup creation using the interactive help menu.
- Weld Overlay and RayTracing simulation.
- Group copy option for fast multiple-group configuration.

Calibration

To achieve a code-compliant inspection, the Calibration Wizard ensures that every focal law in every group is the direct equivalent of a single-channel conventional flaw detector. The user is guided step-by-step through the required calibrations like: Velocity, Wedge Delay, Sensitivity, TCG, DAC, AWS, and encoder calibrations. Now, TOFD PCS calibration and lateral wave straightening can be performed automatically.

Acquisition

The OmniScan MX2 enables easy configuration of inspection parameters for either manual, one-line, or raster encoded scans. The acquisition is displayed in real time through different views and offers the ability to store data on a hot-swappable SD card or USB 2.0 device.

- Intelligent layouts for configuring up to 8 groups.
- Full-screen mode for better visualization of defects.
- Synchronisation and measurements can be processed using different gate combinations.

Data Analysis and Reporting

- Data, reference, and measurement cursors for defect sizing.
- Extensive readings database and predefined lists for trigonometry, flaw statistics on axes, volumetric position information, code-based acceptance criteria, corrosion mapping statistics, etc.
- Views are linked for interactive analysis and are automatically updated when performing off-line gate repositioning.
- Optimized preconfigured layouts for quick and simple length, depth, and height sizing of flaws.

Whether you prefer performing data analysis on a computer or simply wish to maximize the time your OmniScan is at work in the field, OmniPC or TomoView are the perfect software companions for your OmniScan.

Olympus Solutions

Over the last few years Olympus has devoted considerable effort to creating and deploying several complete market solutions aimed at meeting customers' needs.

Pressure Vessel Weld Inspection

A complete inspection of pressure vessel welds can be performed in a single scan using an OmniScan PA and manual scanner such as the HSMT series or a motorized scanner like the WeldROVER. By combining TOFD and PA in a single inspection pass, a significant reduction in inspection time can be achieved as compared with conventional raster scanning or radiography. Furthermore, inspection results are available immediately, enabling you to detect problems with welding equipment and fix them right away.

Weld Inspection of Small-Diameter Pipes

When coupled with the COBRA manual scanner, the OmniScan flaw detector is capable of inspecting pipes ranging from 0.84 in. OD to 4.5 in. OD. With its very slim design, this manual scanner is able to inspect pipes in areas with limited access. Adjacent obstructions such as piping, supports, and structures can be as close as 12 mm (0.5 in.).

Manual and Semiautomated Corrosion Mapping

The OmniScan PA system with the HydroFORM scanner is designed to offer the best inspection solution for detecting wall-thickness reductions resulting from corrosion, abrasion, and erosion. In addition, this system detects mid-wall damage, such as hydrogen-induced blistering and manufacturing-induced delamination, and clearly differentiates such anomalies from loss-of-wall-thickness.
For this application, phased array ultrasound technology offers superior inspection speed, data point density, and detection.

Composite Inspection

Parts made of laminate composite materials pose an inspection challenge due to their various shapes and thicknesses.
Olympus offers complete solutions for the inspection of carbon-fiber-reinforced polymer structures. These solutions are based on the OmniScan flaw detector, the GLIDER™ scanner, the RollerFORM™ phased array wheel probe, and dedicated probes and wedges designed for CFRP flat panel and radius inspection.

OmniScan MX2 Specifications*

OmniScan MX2 Mainframe Specifications

Overall dimensions (W x H x D)	325 mm x 235 mm x 130 mm (12.8 in. x 9.3 in. x 5.1 in.)
Weight	3.2 kg (7 lb), no module and one battery
Data Storage	
Storage devices	SDHC card, most standard USB storage devices, or fast Ethernet
Data file size	300 MB
I/O Ports	
USB ports	3
Audio alarm	Yes
Video output	Video out (SVGA)
Ethernet	10/100 Mbps
I/O Lines	
Encoder	2-axis encoder line (quadrature, up, down, or clock/direction)
Digital input	4 digital TTL inputs, 5 V
Digital output	4 digital TTL outputs, 5 V, 15 mA
Acquisition on/off switch	Remote acquisition enabled TTL, 5 V
Power output line	5 V, 500 mA power output line (short-circuit protected)
Alarms	3 TTL, 5 V, 15 mA
Analog output	2 analog outputs (12 bits) ±5 V in 10 kΩ
Pace input	5 V TTL pace input
Display	
Display size	26.4 cm (10.4 in.) (diagonal)
Resolution	800 pixels x 600 pixels
Brightness	700 cd/m²
Number of colors	16 million
Type	TFT LCD
Power Supply	
Battery type	Smart Li-ion battery
Number of batteries	1 or 2 (battery chamber accommodates two hot-swappable batteries)
Battery life	Minimum 7 hours with two batteries
Environmental Specifications	
Operating temperature range	-10 °C to 45 °C (14 ºF to 113 ºF)
Storage temperature range	–20 °C to 60 °C (–4 ºF to 140 ºF) with batteries –20 °C to 70 °C (–4 ºF to 158 ºF) without batteries
Relative humidity	Max. 70% RH at 45°C noncondensing
Ingress Protection Rating	Designed for IP66
Shockproof rating	Drop-tested according to MIL-STD-810G 516.6
MX2 Module Compatibility	
MXU 4.1R8 and later	OMNI-M2-PA32128PR
MXU 4.0 and later	OMNI-M2-PA1664
	OMNI-M2-PA16128
	OMNI-M2-PA32128
	OMNI-M2-UT-2CH
MXU 3.1 and MXU 4.1R9 and later	OMNI-M-UT-8CH

The OmniScan MX2 meets or exceeds the minimum instrumentation and software requirements as specified in ASME, AWS, API, and EN codes.

Phased Array Module Specifications (Applies to OMNI-M2 modules)

Overall dimensions (W x H x D)	226 mm x 183 mm x 40 mm (8.9 in. x 7.2 in. x 1.6 in.)	
Weight	1.6 kg (3.5 lb)	
Connectors	1 Phased Array connector: Olympus PA connector 2 UT connectors: LEMO 00	
Number of focal laws	256	
Probe recognition	Automatic probe recognition	
Pulser/Receiver		
Aperture	32 elements**	
Number of elements	128 elements**	
Pulser	**PA Channels**	**UT Channels**
Voltage	40 V, 80 V, and 115 V	95 V, 175 V, and 340 V
Pulse width	Adjustable from 30 ns to 500 ns, resolution of 2.5 ns	Adjustable from 30 ns to 1,000 ns; resolution of 2.5 ns
Pulse shape	Negative square pulse	Negative square pulse
Output impedance (32:128PR model)	35 Ω in in pulse-echo mode 30 Ω in pitch-catch mode	<30 Ω
Output impedance (all other models)	25 Ω	<30 Ω
Receiver	**PA Channels**	**UT Channels**
Gain	0 dB to 80 dB, maximum input signal 550 mVp-p (full-screen height)	0 dB to 120 dB maximum input signal 34.5 Vp-p (full-screen height)
Input impedance (32:128PR model)	50 Ω in pulse-echo mode 90 Ω in pitch-catch mode	60 Ω in pulse-echo mode 50 Ω in pitch-catch mode
Input impedance (all other models)	65 Ω	60 Ω in pulse-echo mode 50 Ω in pulse-receive mode
System bandwidth	0.5 MHz to 18 MHz (NOTE: The previously stated 0.6 MHz lower limit used a strict –3 dB attenuation for the cutoff frequency.)	0.25 MHz to 28 MHz (–3 dB)
Beamforming		
Scan type	Sectorial and linear	
Group quantity	Up to 8	
Data Acquisition		
Digitizing frequency	100 MHz	
Maximum pulsing rate	Up to 10 kHz (C-scan)	
Data Processing	**PA Channels**	**UT Channels**
Number of data points	Up to 8,192	
Real-time averaging	2, 4, 8, 16	2, 4, 8, 16, 32, 64
Rectifier	RF, full wave, half wave +, half wave –	
Filtering	3 low-pass, 6 band-pass, and 4 high-pass filters.	3 low-pass, 6 band-pass, and 3 high-pass filters (3 low-pass filters when configured in TOFD)
Video filtering	Smoothing (adjusted to probe frequency range)	
Data Visualization		
A-scan refresh rate	Real time: 60 Hz	
Data Synchronization		
On internal clock	1 Hz to 10 kHz	
On encoder	On 2 axes: from 1 to 65,536 steps	
Programmable Time-Corrected Gain (TCG)		
Number of points	32: One TCG curve per focal law	
Alarms		
Number of alarms	3	
Conditions	Any logical combination of gates	
Alarm outputs	2	

** Aperture and number of elements vary with each model. Current shipping models feature 16:64, 16:128, 32:128, 32:128PR configurations.

OLYMPUS SCIENTIFIC SOLUTIONS AMERICAS CORP. is certified to ISO 9001, ISO 14001, and OHSAS 18001.

*All specifications are subject to change without notice.

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