OLYMPUS

Confidence You Can See

OmniScan™ X3 Phased Array Flaw Detector with TFM

Innovative TFM

TFM Images with Superb Detail

The combination of the OmniScan™ X3 flaw detector's live total focusing method (TFM) envelope processing, up to 1,024 × 1,024 grid resolution, and vibrant color display make its TFM images stand out with exceptional detail. Defects appear sharp and clear with high resolution.

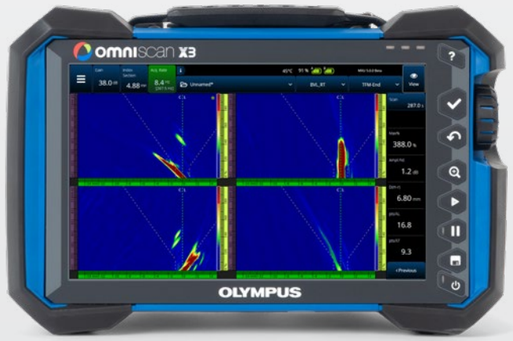
Confirm Your Coverage in Advance

The Acoustic Influence Map (AIM) tool provides you with an instant visual model of the sensitivity based on your mode, settings, and simulated reflector.

The tool enables you to visualize the effect of a wave set (in TFM mode), see where sensitivity stops, and adjust your scan plan accordingly.

Detect Early-Stage HTHA

The instrument's advanced imaging capabilities translate into better and finer detection of high-temperature hydrogen attack (HTHA), so you can detect the damage mechanisms at an early stage, when it matters the most.



Facilitates Flaw Interpretation and Sizing

Up to four TFM modes provide images from different angles. This information can provide you with greater confidence when identifying defects and determining defect depth.

Improved Phased Array

Innovations for Efficiency

3X as fast as the OmniScan MX2 flaw detector (max pulse repetition frequency)

Single time-of-flight diffraction (TOFD) menu for accelerated workflow

Improved fast phased array calibration lessens frustration

800% high amplitude range reduces the need to rescan

Onboard Dual Linear Array™ and Dual Matrix Array™ probe support accelerates setup creation

Compatible with Existing Files and Setups

Existing probes and scanners

MX2/SX data files to compare new data with old and monitor changes through time

MX/MX2/SX setups to facilitate procedure compliance

Reliable and Easy to Use

Get to Work, Quickly

The onboard scan plan, improved fast calibration, and streamlined user interface eliminate unnecessary steps to help ensure that you can complete your inspection setup in minimal time.

If you are an existing OmniScan™ user, the transition from the MX2 is fast. If you are new to phased array ultrasonic testing or TFM, the OmniScan X3 flaw detector is easy to learn.

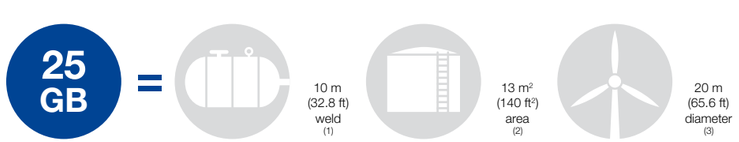
The Workhorse of Your Inspection Fleet

The OmniScan™ X3 flaw detector offers tools to help you complete your work efficiently. Its range of applications include welds, pipelines, pipes, corrosion resistant alloys, corrosion mapping, HTHA inspection, detection of stepwise cracking, composite inspection, flaw imaging, and more.

Equipped for Tough Challenges

Scan without Stopping

The 25 GB maximum file size enables you to continuously scan large components without stopping.



(1) A single scan using 4 TFM groups optimized for a thickness of 50 mm.
(2) Scan up to a single 7.6 m × 1.7 m (25 ft × 5.6 ft) storage tank plate with a 1 mm × 1 mm resolution using a HydroFORM™ scanner.
(3) A single pass of a wind tower weld using 4 sector scans, 2 linear scans, and 2 TOFD groups.

A Better OmniScan

- IP65 certified rain and dust proof
- User-replaceable cooling fan can be changed without opening up the instrument or voiding the calibration
- Onboard GPS to record the location of your data
- Connect wirelessly to the Olympus Scientific Cloud™ to download the latest software as soon as it's available

Specifications

Size (W × H × D)	335 mm × 221 mm × 151 mm (13.2 in. × 8.7 in. × 5.9 in.)	
Weight	5.7 kg (12.6 lb) (with 1 battery)	
Onboard Storage	64 GB internal SSD storage, extendable as needed with an external USB drive; 25 GB maximum file size	
Storage Devices	SDHC™ and SDXC™ cards or most standard USB storage devices	
GPS	Yes (unless specified otherwise for some regions)	
Alarms	3	
Wireless Connection	Yes (USB dongle sold separately as an accessory)	
Connectors	1 PA connector, 2x UT channels (2 P/R connectors each)	
Number of Groups	8 groups (16:128PR and 32:128PR); 16:64PR offers either 2 groups (PA, UT, or TFM) or 2PA + 1 UT	
Certifications	ISO 18563-1:2015 ISO 22232-1:2020	
Display		
Type	TFT LCD with resistive touch screen	
Size	269 mm (10.6 in.)	
Resolution	1280 × 768 pixels	
Inputs and Outputs		
Ports	2 USB ports (one hidden behind the battery), 1 USB 3.0, HDMI video output, SDHC memory card, and Ethernet communication port	
Encoder	2-axis encoder line (quadrature or clock/direction), 3rd encoder ready	
Digital Input	6 digital inputs, TTL (enabling acquisition ON/OFF)	
Digital Output	5 digital outputs, TTL	
Power Output Line	5 V nominal, 1 A (short-circuit protected), and 12 V output at 1 A	
External DC Supply		
DC-IN Voltage	15 VDC to 18 VDC (min. 50 W)	
Connector	Circular, 2.5 mm pin diameter, center-positive	
Battery		
Type	Lithium-ion battery	
Capacity	93 Wh	
Number of Batteries	2	
Life	5 hours using 2 batteries (hot-swap capable)	
PA/UT Configuration		
Frequency	Effective Digitizing Frequency	Up to 100 MHz
	Max PRF	20 kHz
Display	Refresh Rate	A-scan: 60 Hz; S-scan: 20 Hz to 30 Hz
	Envelope (Echo Dynamic Mode)	Yes: Volume-corrected S-scan (30 Hz)
	A-Scan Height	Up to 800%
Data Specifications		
Processing	Maximum Number of A-Scan Data Points	Up to 16,384
	Real-Time Averaging	PA: 2, 4, 8, 16 UT: 2, 4, 8, 16, 32, 64
	Rectification	RF, full wave, half wave+, half wave-
	Filtering	PA channel: 3 low-pass, 6 band-pass, and 4 high-pass filters UT channel: 8 low-pass, 6 band-pass, and 4 high-pass filters (3 low-pass filters when configured in TOFD)
	Video Filtering	Smoothing (adjusted to the probe frequency range)
Programmable TCG	Number of Points	32: One TCG (time-corrected gain) curve per focal law
	Range	PA (standard): 40 dB per step of 0.1 dB PA (extended): 65 dB per step of 0.1 dB UT: 100 dB per step of 0.1 dB
	Maximum Slope	PA (standard): 40 dB/10 ns PA (extended): 0.1 dB/10 ns UT: 40 dB/10 ns

Acoustic Specifications			
		PA Channel	**UT Channels**
Pulser	Voltage	40 V, 80 V, and 115 V	85 V, 155 V, and 295 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
	Fall Time	< 10 ns	< 10 ns
	Pulse Shape	Negative square pulse	Negative square pulse
	Output Impedance	28 Ω in pulse-echo 24 Ω in pitch-catch	< 30 Ω
Receiver	Gain Range	0 dB to 80 dB maximum input signal; 800 mVp-p (full-screen height)	0 dB to 120 dB maximum input signal; 30 Vp-p (full-screen height)
	Input Impedance	57 Ω ± 10% at 9 MHz in pulse-echo 100 Ω ± 10% at 9 MHz in pitch-catch	50 Ω in pulse-echo mode 50 Ω in pulse-receive mode
	System Bandwidth	0.5 MHz to 18 MHz	0.25 MHz to 28 MHz
Beam Formation	Scan Type	Single, linear, sectorial, compound, and TFM	
	Maximum Aperture	OMNIX3-PA16128PR and OMNIX3-PA16:64PR = 16 elements OMNIX3-PA32128PR = 32 elements	
	Number of Focal Laws	Up to 1024	
	Delay Range Transmission	0 µs to 10 µs in 2.5 ns increments	
	Delay Range Reception	0 µs to 6.4 µs in 2.5 ns increments	
TFM/FMC			
Supported Modes	Pulse echo: L-L, TT, and TT-TT Self-Tandem: TT-T, LL-L, LT-T, TL-T, TT-L, TTT-TT, and TL-L		
Parallel Multimode TFM	4 simultaneous TFM groups (wave sets)		
Live Envelope Process	Yes		
Maximum Aperture	64-element extended aperture (32-128PR only) 32-element extended aperture for 16:64PR and 16:128PR		
Image Resolution	Up to 1024 × 1024 (1 MM points) (for each TFM wave set)		
Operating Environment			
Ingress Protection Rating	IP65 certified (completely protected against dust and water jets from all directions (6.3 mm nozzle))		
Shockproof Rating	Drop tested according to MIL-STD-810G		
Intended Use	Indoor and outdoor use		
Operating Temperature	–10°C to 45° C (14 °F to 113°F)		
Storage Temperature	–20 °C to 60 °C (–4 °F to 140 °F) (with battery inside) –20 °C to 70 °C (–4 °F to 158 °F) (with no battery inside)		

Three Available Options
The OmniScan X3 flaw detector is available in 16:64PR*, 16:128PR, and 32:128PR models. It is easy to upgrade to the 32:128PR model if you decide you need more pulsers.
* Limited to 2 groups (PA, UT, or TFM) or 2PA + 1 UT.

Standard Inclusions (32:128PR)
OmniScan X3 phased array instrument, including FMC/TFM functionality and 2 UT channels, and regionally configured power cord with printed instructions. Includes the latest version of OmniScan MXU software, a rigid transport case, calibration certificate, 93 Wh lithium-ion battery, spare antiglare screen protector, DC charger with power cord, USB key with OmniScan software and user manuals, SDHC™ card, empty USB key for file transfer purposes, and OmniPC analysis software. GPS functionality restricted in some regions. Wireless dongle sold separately. Contact your Olympus representative for more details.

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