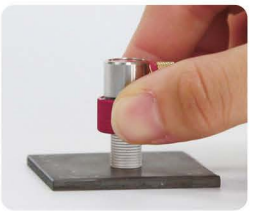
ATO

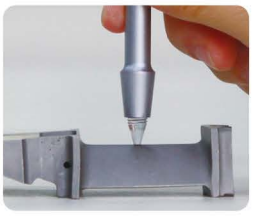
PM5 Gen3 Precision Ultrasonic Thickness Gauge

* Design Patent: Instrument Protective Case (ZL 2020 3 0600327.9)
* Utility Model Patent: Instrument Protective Case (ZL 2020 2 1834019.3)
* Invention Patent: Multi-Measurement Method (ZL 2024 1 0073980.1)









PM5 Gen3 Precision Thickness Gauge
Helping You Overcome Challenges and Stay Ahead

After 3 years of dedicated upgrades, the new-generation PM5 Gen3 Precision Ultrasonic Thickness Gauge delivers outstanding performance, high measurement accuracy, and a compact yet rugged design. Its readings feature excellent stability and repeatability, capable of accurately distinguishing test blocks with a difference of 0.001 mm. With enhanced thin-material measurement capabilities, it achieves a lower limit of 0.05 mm in steel (high-frequency option). The device is compatible with a wide range of probes, supported by over 20 types of single element probes covering frequencies from 1 to 75 MHz. Equipped with multiple powerful software options, flexible options for users. The PM5 Gen3 thickness gauge housing is IP67-rated and comes with a rubber protective case and reinforced design, offering reliable protection against drops and impacts. It ensures reliable performance in harsh industrial environments, meeting the toughest demands of on-site inspections.

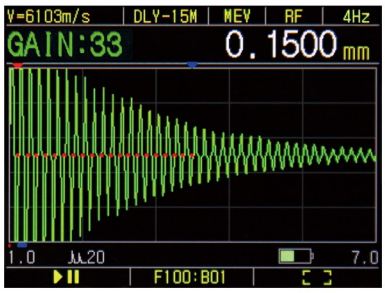


PM5 Gen3 Standard Model: Main Features

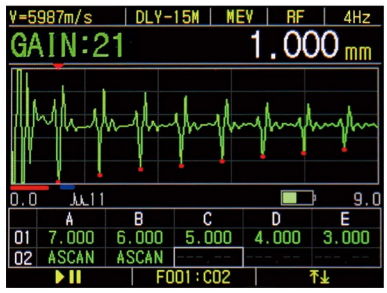
- Real-Time A-Scan with complete waveform adjustment functions, capable of locking onto any echo
- 0.001mm resolution (can truly distinguish test blocks with a difference of 0.001mm), and the displayed value has high stability and repeatability
- Measurement Range in Steel: 0.1 mm ~ 480 mm
- Probe Types: Single-Element Probes, (delay line probes, contact probes, protective membrane probes, pencil probes, water immersion probes)
- Automatically matches the excitation pulse, damping, and sampling frequency according to the selected probe
- The factory pre-sets the default configuration of various probes, and can also store 400 sets of user-defined configurations, one-click loading to simplify operation
- 200 MHz Digital Frequency ensures accurate measurement with distortion-free waveforms
- Extremely low power consumption of less than 0.3w, two AA alkaline batteries can work continuously for 22 hours
- The sensitivity is 12dB higher than the previous generation PM5 Gen2
- Measurement Mode: P-E (Pulse-Echo), E-E (Echo-Echo), I-E (Interface Echo-Echo), MEV (Multiple-Echo Verification)
- Measuring Point : wave flank, wave peak, pre-zero crossing post-zero crossing
- 60dB Analog Gain + 6.5x Digital Gain. Digital gain amplifies the signal and allows for a maximum amplitude range of 650% to prevent signal saturation
- Linear Time-Dependent Gain (TDG) helps reduce dead zones caused by excitation pulse or interface echo; slope start point can be adjusted automatically or manually
- Automatic Gain Control (AGC), include TDG and normal automatic gain modes
- Guided Calibration, waveform display during the process, with adjustable waveform
- Material Velocity Table, including 52 common material sound velocities
- Freeze function allows calibration and adjustment of measurement mode, gain, range, gate, and other parameters directly on the frozen waveform
- One-Click Range Zoom, quickly find/enlarge waveforms
- Units: mm, in, μm, mil
- Rectification Modes: RF, RF-, HALF+, HALF-, FULL
- Upper/Lower Limit Alarm Mode, supports Thickness, Sound Velocity and Time-of-Flight
- Minimum/Maximum Value Mode, Difference/Reduction Rate Mode
- Echo Strength Indicator, the echo height of the measurement point can also be displayed on the large digital view
- Time-based B-Scan, converting thickness values into cross-sectional images in real time to observe the internal corrosion profile of the workpiece
- Full-Screen Display Function, one-click switching, increasing waveform display area by 20%
- "A-Scan + Storage Grid" view, developed specifically for easy data recording
- It can store 100,000 measurement values and 400 sets of parameter configurations
- Standard Windows-Based DataView Interface Software
- Designed to meet IP67 Dust and Water Resistance (1m underwater for 30minutes)
- Rubber Sheath with Stand

Powerful Application Functions

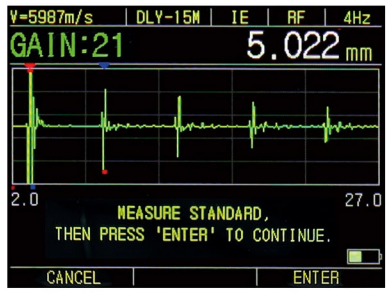
All PM5 Gen3 thickness gauge models are equipped with the following measurement interface, combining professional and detailed design with intuitive and easy operation. Even non-professionals can quickly master it to obtain stable, reliable, and high precision measurement data—perfectly meeting the challenges of various industrial inspection scenarios.



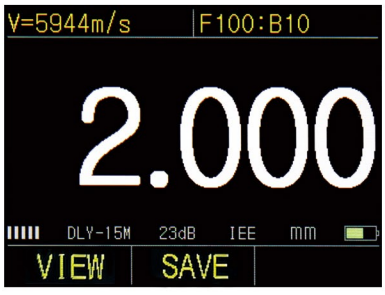
Full-Screen A-Scan Interface



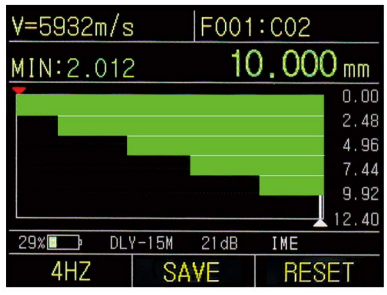
Grid A-Scan Interface



Guided Calibration Interface



Large Digit Interface



Time-Base B-Scan Interface

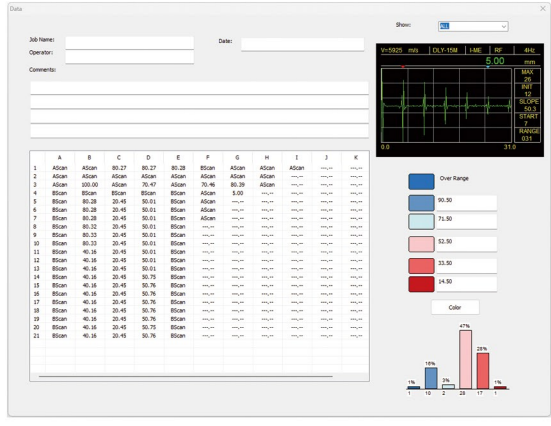


Data Storage Interface

Data Logger and PC Interface Software

The PM5 Gen3 ultrasonic thickness gauge is equipped with a built-in data logger, providing users with an efficient and convenient solution for data storage and transfer.

◎ Large-Capacity Storage, Supporting Up to 400 Files and 100,000 Measurement Values.
◎ It can store up to 400 user-defined profiles with all parameters and waveforms. Adjusted measurement parameters can be saved along with the results, allowing subsequent tests to recall these settings directly, without the need to reset them, significantly improving test efficiency.
◎ Easy Grid-Based File Management System. Parameters, waveforms, and measurement data are stored together for more convenient review.
◎ Standard Windows-Based DataView Interface Software is included, allowing users to export stored data from the thickness gauge for data management and analysis, alarms, printing, or saving data in Excel format.



DataView Interface Software

PM5 Gen3 Function Options

The PM5 Gen3 series ultrasonic thickness gauges are designed with the core mission of solving customers' thickness measurement challenges. A wide range of functional options have been developed to meet the diverse needs of different industries, allowing users to flexibly configure the instrument according to their specific application scenarios.

- High-Frequency and High Resolution
- Noise Reduction and Damping
- Double-Layer Measurement Software
- Large Measurement Range Mode
- Temperature Compensation
- System Integration & Remote Control
- High-Speed Measurement & Simultaneous Directional Display
- Ultrasonic Velocity Meter and Time-of-Flight
- Window Mode and Adjustable Sampling Frequency
- Internal Oxide Scale Measurement Software
- Directional Capture
- Auto-Freeze
- Dual-Element Probe
- Bluetooth
- Multi-Layer Software
- Four-Channel Option

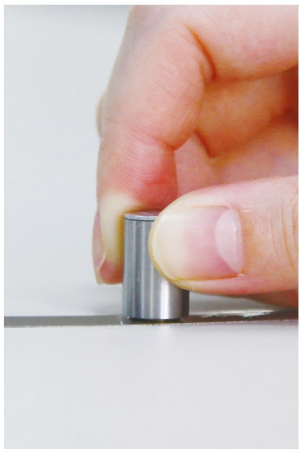
High-Frequency Option

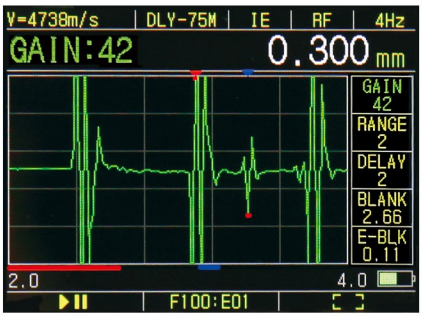
Supporting ultrasonic frequencies up to 75 MHz, compatible with 30 MHz, 50 MHz, and 75 MHz high-frequency probes. Suitable for measuring ultra-thin materials, coatings, and multi-layer structures. With a 50 MHz probe,the minimum measurable thickness in steel is 0.05 mm.



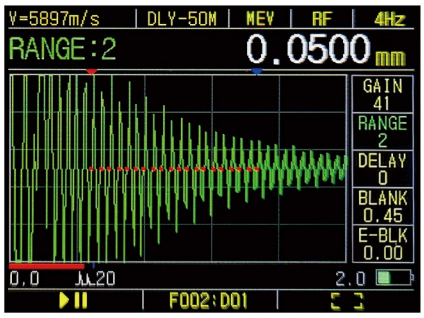
0.0001 mm Resolution

In MEV mode, the maximum display resolution reaches 0.0001 mm, 0.1 μm, 0.00001 in, or 0.01 mils, which is suitable for high-precision measurement of thin materials.





75 MHz Probe for Measuring
Copper-Aluminum Composite Materials



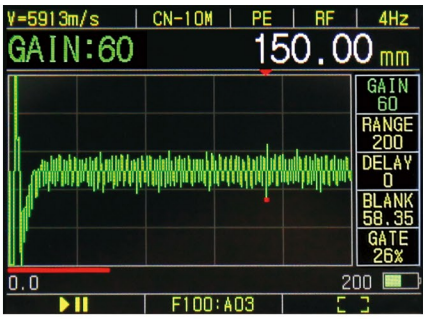
50 MHz Probe for
Measuring Thin Sheets Down to 0.05 mm

High-Speed Measurement & Simultaneous Directional Display

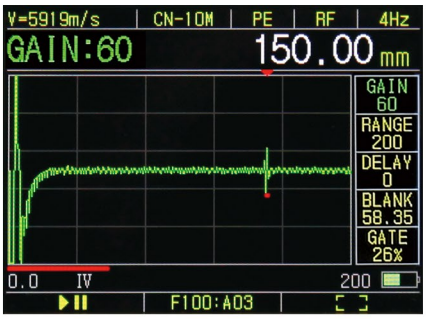
High-speed measurement runs in the background, While a low-refresh-rate directional display is shown on the front screen, configurable with 8 directional display schemes. Truly achieves high-speed visibility with no missed detection during scanning. In window mode, the maximum measurement rate reaches 2 KHz, adjustable in 16 Hz increments.

Noise Reduction and Damping

Noise reduction function can significantly increase the signal-to-noise ratio.It is very suitable for application scenarios requiring high sensitivity measurements, such as layered composite steel (steel/stainless steel) thickness measurement and thickness measurement of highly attenuating materials. Damping can be set to High, Low or Default to optimize the sensitivity and resolution of the probes.



Noise Reduction Off



Noise Reduction On

Ultrasonic Velocity Meter and Time-of-Flight

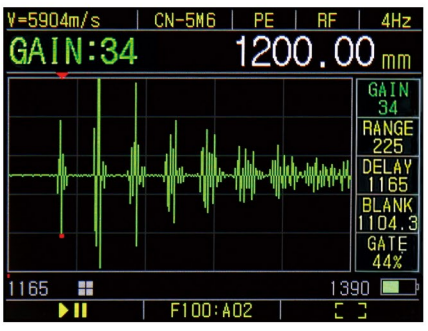
It can measure material sound velocity and time-of-flight. This mode is equipped with Alarm, Maximum/Minimum, Difference/Percentage and Data Storage functions. The unit of sound velocity is m/s or in/μs. The unit of time-of-flight is ns or μs. The typical applications include cast iron spheroidization rate test, bolt stress measurement, monitoring material density changes, etc.

Window Mode

The starting point and time of data acquisition are adjustable,corresponding to display the window delay and range.The maximum delay distance reaches up to 62 m in steel. This function can either extend the measuring range or increase the measurement speed.

Adjustable Sampling Frequency

Sampling frequency selectable at 200 MHz, 100 MHz, 50 MHz, or Default, optimizing both measurement accuracy and measuring range.

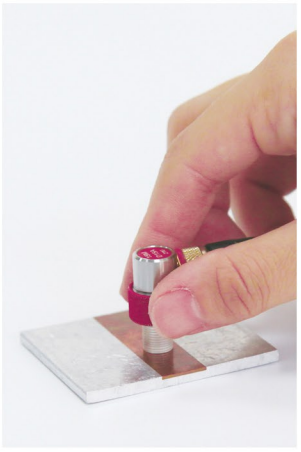


1200 mm Long Steel Bar
Thickness Measurement



Double-Layer Measurement Software

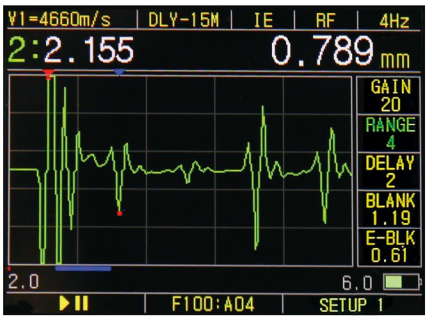
The powerful double-layer measurement software that can simultaneously measure and display the thickness of two layers of materials, and can view and adjust the A-scan waveform of each layer separately,just like two instruments measuring at the same time. This option also includes multiple scan and time-difference function. Typical applications are double-layer composite plate and coated metal materials measurements.



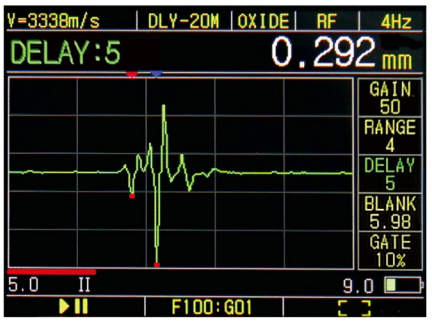
Internal Oxide Scale Measurement Software

Measures the thickness of oxide scales and deposits on boiler tube inner walls, used for evaluating and predicting boiler tube life. We have developed an Oxide Layer Measurement mode that effectively identifies oxide layer echo signals and can simultaneously display the thickness of both the metal substrate and the oxide layer. Standard 15 MHz probe with a minimum measurement limit of 0.25 mm for oxide layers; a 20 MHz shear wave probe offers higher resolution, with a minimum measurable oxide layer thickness of 0.15 mm; for thick-walled tubes, a 10 MHz, 6 mm contact probe is recommended.





Double-layer Copper-Aluminum Composite Plate Thickness Measurement



Oxide Layer Wall Thickness Measurement

Large Measurement Range Mode

It is a composite measurement mode based on pulse-echo method. The display range can up to 38 m. The key feature is achieving large range measurement while maintaining high accuracy.

Auto-Freeze

Supports four trigger conditions,including highest echo, number of consecutive equal thickness values, number of echoes, and target thickness range. When all trigger conditions are met at the same time, the waveform is automatically frozen.

Bluetooth

Real-time measurement values can be wirelessly transmitted to applications on computers or mobile devices, enabling cross-platform data transfer without additional software installation. Supports Windows, Android, and iOS systems.

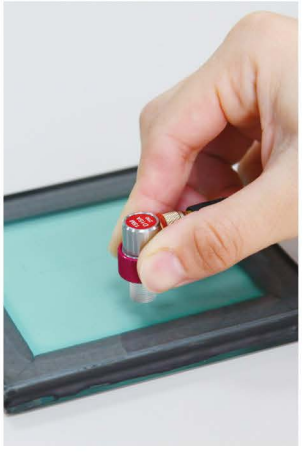
Temperature Compensation

The sound velocity of a material changes with temperature, which affects measurement accuracy. The temperature compensation function automatically calculates the compensation based on the input calibration block temperature and the actual workpiece temperature, and displays the corrected thickness value.



Multi-Layer

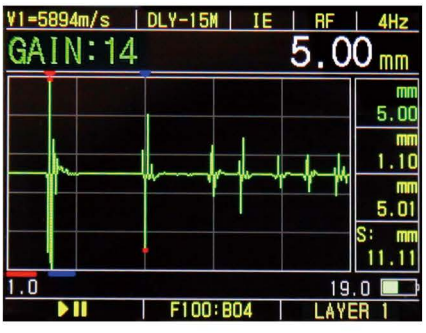
Powerful Multi-Layer software (including all functions of the double-layer measurement software), based on multiple measurement technology protected by a granted national invention patent. It can simultaneously measure and display up to five independent layer thicknesses, supports total thickness calculation and display for any combination of layers, and integrates professional features such as multi-scan and time-difference to achieve precise measurement of complex multi-layer structures.



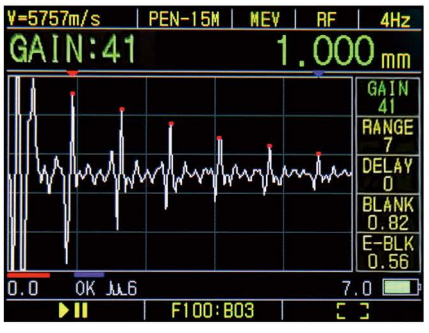
Directional Capture

Provides five capture modes (Minimum, Maximum, Highest Echo, Maximum Consecutive Equal Values, Maximum Number of Echoes),and supports automatic or manual display of captured results. Accurately captures target thickness and waveform during high-speed scanning, high-temperature measurements, and curved surface measurements.





Multilayer Laminated Glass Thickness Measurement



Turbine Blade Thickness Measurement

Dual-Element Probe Option

Supports all dual-dement probe functions, including Pulse-Echo and Echo-Echo measurement modes, and automatic V-path error correction.

Dual-element probes are suitable for measuring corroded metal thickness. Pulse-Echo mode is suitable for measuring uncoated materials,while Echo-Echo mode can penetrate coatings to measure the thickness of the metal substrate.

System Integration & Remote Control

◎ Real-Time Communication: Users can integrate the PM5 Gen3 thickness gauge into their own products, connecting via wired or wireless methods for real-time transmission of thickness values, waveforms, and parameters. The thickness gauge supports power supply via the USB interface.

◎ UStation Thickness Measurement Software: Connect the PM5 Gen3 to a PC, laptop, or tablet running UStation software to form a thickness measurement workstation, providing a large touchscreen display and additional processing capabilities for improved convenience and efficiency.

◎ Wi-Fi: Master/Slave dual-mode Wi-Fi functionality. Even without an external network, it can connect to a computer or tablet via Wi-Fi Master mode. Enables high-speed wireless transmission when combined with the real-time communication option.

◎ Wireless Data Transmission: Maximum communication range of 2500 m in an open environment, with a communication speed of 115200 bps.

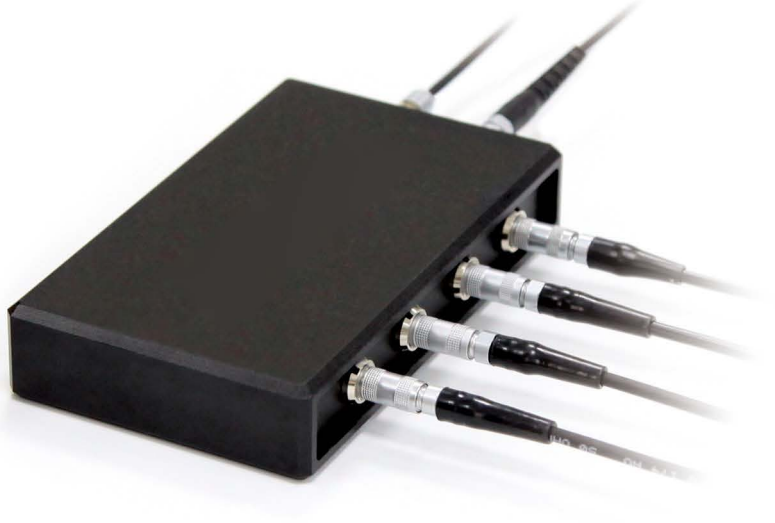


UStation Software Interface

Four-Channel Option

◎ Based on multiple-measurement technology, the PM5 Gen3 can be connected to the optional MX-4 multiplexer to simultaneously display thickness values measured by up to four different probes. The A-scan waveform for each channel can be individually viewed and adjusted, with 28 independent parameters per channel. When not connected to the MX-4, the PM5 Gen3 functions identically to the standard thickness gauge.





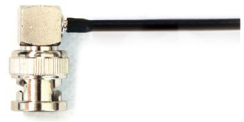
MX-4 Four-channel Multiplexer
Dimensions: 113 mm × 67 mm × 22 mm
Weight: 182 g

Accessories

Cables


LEMO 00 Connector


LEMO 00 Armored


BNC Right Angle Connector


Microdot Connector


Microdot Armored


LEMO 00 Right Angle Connector


BNC Connector


LEMO 00 Right Angle Connector


LEMO 1 Connector

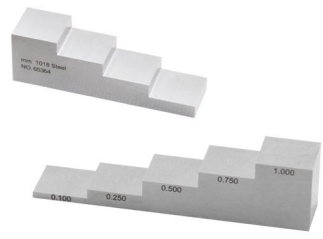

Microdot Right Angle Connector


Waterproof UHF Connector

Test Blocks

Material	Product Code	Step
1018 Steel	B-101-0002	0.250" 0.500" 0.750" 1.000"
304 Stainless Steel	B-101-0033	0.100" 0.200" 0.300" 0.400" 0.500"
6063 Aluminum	B-101-0037	2.50mm / 5.00mm / 7.50mm / 10.00mm / 12.50mm
6AL4V Titanium Alloy	B-101-0057	0.100" 0.200" 0.300" 0.400" 0.500"
7075 Aluminum	B-101-0031	2.50mm / 5.00mm / 7.50mm / 10.00mm / 12.50mm 15.00mm / 17.50mm / 20.00mm / 22.50mm / 25.00mm

Note: We offer over 100 types of test blocks, with only a selection of specifications shown here.



Couplant

Type	Product Code	Description
Universal Type	A-101-0006	Temperature Range: -40~99°C, Capacity: 50ml/Bottle
High Temperature	A-101-0003	Temperature Range: -18~371°C, Ferrous metal rust resistance reaches 80
Shear Wave	A-101-0011	Capacity: 80g/Tube, environmentally friendly formula, with very high viscosity



Delay Line

Model	Product Code	Description
Φ13.9*12.5mm	P-112-0018	Suitable for probes with a 13mm element size
Φ4.7*5.6mm	P-112-0019	Suitable for probes with a 3mm element size
PHT-13-1	P-112-0021	Suitable for probes with a 13mm element size, the maximum temperature is 480°C for short-term contact, followed by a one-minute cooling period
PHT-6-0.5	P-112-0013	Suitable for probes with a 6m element size, the maximum temperature is 480°C for short-term contact, followed by a one-minute cooling period



Single-Element Probe
for Ultrasonic Thickness Measurement

Single-Element Delay Line Probe

It has the advantages of high accuracy, high resolution, and low measurement limit, making it suitable for measuring the thickness of thin and ultra-thin materials. High-Temperature Thickness Measurement can be performed by changing the delay line.

Model	D2.25M13	D5M13	D5M6	D10M6	D15M6	D20M3	D30M3	D50M3	M2102
Frequency	2.25MHz	5MHz	5MHz	10MHz	15MHz	20MHz	30MHz	50MHz	75MHz
Element Size	13mm	13mm	6mm	6mm	6mm	3mm	3mm	3mm	3mm
Contact Diameter	14mm	14mm	7.5mm	7.5mm	7.5mm	4.8mm	9mm	9mm	15mm
Manual Measurement Range (Steel)	1-25mm	0.4-30mm	0.3-30mm	0.2-30mm	0.15~30mm	0.13-12mm	0.09-6mm	0.05-6mm	0.03-0.7mm

Single-Element Protect Membarane Probe

The protective membrane probe is impedance-matched with coating materials, making it suitable for thickness measurement through thick coatings. It features a multiple-echo verification mode and can measure the metal substrate thickness through coatings up to 100 mm. Smooth surfaces allow dry coupling.

Model	M2.25M19	M2.25M13	M3.5M13	M5M13	M5M10	M5M6
Frequency	2.25MHz	2.25MHz	3.5MHz	5MHz	5MHz	5MHz
Element Size	19mm	13mm	13mm	13mm	10mm	6mm
Contact Diameter	21.7mm	16.5mm	16.5mm	16.5mm	13.5mm	8mm
E-E Manual Measurement Range (Steel)	0.8-230mm	0.8-230mm	0.6-230mm	0.5-230mm	0.5-230mm	0.5-230mm
MEV Manual Measurement Range (Steel)	0.6-150mm	0.6-150mm	0.6-150mm	0.4-150mm	0.4-150mm	0.4-80mm



Single-Element Probe for Ultrasonic Thickness Measurement

Single-Contact Probe

It offers a wide measurement range and strong penetration, making it suitable for measuring medium-thickness plates and highly attenuative materials

Model	C2.25M13	C5M13	C5M6	C10M6	C20M3
Frequency	2.25MHz	5MHz	5MHz	10MHz	20MHz
Element Size	13mm	13mm	6mm	6mm	3mm
Contact Diameter	15mm	15mm	9.4mm	9.4mm	6.3mm
P-E Manual Measurement Range (Steel)	3mm	2mm	2mm	0.8mm	0.4mm
MEV Manual Measurement Range (Steel)	1-100mm	0.4-120mm	0.4-120mm	0.2-80mm	0.2-38mm

Water Immersion Probe

The immersion technique provides a stable coupling method, enabling point or line focusing, and is suitable for automated in-line thickness measurement.

Model	Element Size		Frequency MHz	Product Code	Lower Limit of Measurement in Steel (MEV)
	in	mm			
W2.25M13	0.5	13	2.25	Q-717-0043	1.00mm
W5M6	0.25	6	5	Q-717-0044	0.40mm
W5M13	0.5	13	5	Q-717-0021	0.40mm
W10M6	0.25	6	10	Q-717-0041	0.30mm
W15M6	0.25	6	15	Q-717-0042	0.20mm

Pencil Probe

The delay line is conical, with a very small contact point at the end, suitable for measuring curved and concave surfaces.

Model	Element Size		Frequency MHz	Product Code	Lower Limit of Measurement in Steel (MEV)
	in	mm			
V260-SM	0.125	3	15	J-717-0011	0.20mm



ATO

PM5 Gen3 Main Technical Parameters

	Standard Frequency	High-Frequency

Measurement

Measurement Modes	Pulse-Echo, Interface-Echo, Echo-Echo, Multiple Echo Verification, Automatic	
Probe Types	Single-Ellement Probe (delay line, contact, protective membrane, pencil, water immersion)	
Probe Frequency Range	2.25 MHz～20 MHz	2.25 MHz～75 MHz
Measurement Range in Steel	0.15 mm～10 m	0.05 mm～10 m
Resolution	0.001 mm/ 0.0001 in/ 1 um/ 0.1 mil	0.0001 mm/ 0.00001 in/ 0.1 um/ 0.01 mil
Measurement Units	mm, inch, μm, mil m/s, in/μs, ns, μs (Ultrasonic Velocity Meter and Time-of-Flight option)	
Sound Velocity Range	310 m/s-18,699 m/s, measures sound velocity based on a known thickness sample	
Display Update Rate	Selectable at 4 Hz, 8 Hz or 16 Hz	
Measuring Functions	Upper/ Lower Limit Alarm, Min/Max Value, Difference/Reduction Rate, B-Scan	
Data Logger	100,000 readings; 400 setup files; PC software and USB drive included	
Digital Frequency	200 MHz	

Display

Display Screen	2.4-inch (320x240 dot matrix) IPS wide-angle color display
Rectification Modes	RF, RF-, FULL, HALF+, HALF-
View Modes	Large Digits, A-Scan, B-Scan, A-Scan+Storage Grid

Interface

Probe Connector	LEMO 00
I/O Connector	LEMO 00 4-pin
Communication Interface	Mini USB (Optional RS-232)

General Specifications

Operating Temperature	-10° C～50° C
Housing	Impact-resistant and waterproof housing with sealed gasket; IP67-rated
Dimensions	153 mm×76 mm×37 mm（H×W×D）
Weight	280 g including batteries
Power	Two AA batteries optional power supply via USB port
Battery life	Up to 22 hours continuous operation (AA Alkaline or AA Lithium Batteries)
Power Off	Selectable automatic shut-off after 5, 10, or 20 minutes of inactivity, or manual shut-off only

Standard Configuration

- PM5 Gen3 Ultrasonic Thickness Gauge
- D15A Single-Element Delay Line Probe (Include Test Report)
- Probe Cable
- Rubber Protective Sheath with Stand
- Two AA Alkaline Batteries (Not Included in Air Shipment)
- Couplant (Not Included in Air Shipment)
- Communication Cable
- Communication USB Flash Drive
- User Manual
- Factory Calibration Certificate

Function Options

- High-Frequency and High Resolution
- High-Speed Measurement & Simultaneous Directional Display
- Noise Reduction and Damping
- Ultrasonic Velocity Meter and Time-of-Flight
- Window Mode
- Double-Layer Measurement Software
- Internal Oxide Scale Measurement Software
- Temperature Compensation
- Auto-Freeze
- Large Measurement Range Mode
- Directional Capture
- Multi-Layer Software
- Bluetooth
- System Integration & Remote Control
- Four-Channel
- Dual-Element Probe