

# PM5 Gen3 Precise Ultrasonic Thickness Gauge



## The third - generation precision thickness gauge PM5 Gen3 helps you overcome business challenges and take the lead.

After 3 years of upgrades, the all - new PM5Gen3 precision ultrasonic thickness gauge features excellent performance, accurate measurement, and a compact yet robust design. The measured values have high stability and repeatability, capable of clearly distinguishing test blocks with a thickness difference of only 0.001 mm. It has an even thinner measurement capability, with a lower limit of 0.05 mm in steel (high - frequency option). It is compatible with multiple types of probes. We have equipped it with more than 20 single - crystal probes, with a frequency range covering 1 - 75 MHz. It has many powerful software options, and users can choose flexibly. The PM5Gen3 thickness gauge housing passes the IP67 dust and water resistance rating standard. It adopts a rubber protective sleeve and reinforced design to resist drops and impacts, ensuring stable operation in various harsh environments and meeting the strict requirements of industrial inspection sites.

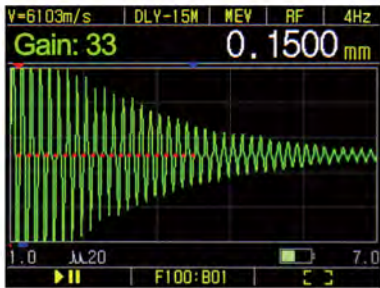


### Main Features of Standard PM5 Gen3

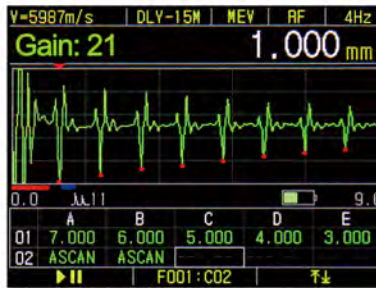
- Real - time A - scan, with complete waveform adjustment functions, and any echo can be locked.
- 0.001 mm resolution (can clearly distinguish test blocks with a thickness difference of 0.001 mm), and the displayed values have high stability and repeatability.
- Measurement range in steel: 0.1 mm ~ 480 mm.
- Probe type: Single - crystal probe, including delay line type, contact type, protective film type, pen - type, and immersion type.
- Automatically match the excitation pulse, damping, and sampling frequency according to the selected probe.
- Factory - preset default configurations for various probes, and 400 groups of user - defined configurations can also be stored. One - key loading simplifies operation.
- 200 MHz digital frequency, ensuring precise measurement and lossless waveforms.
- Extremely low power consumption of less than 0.3 W.
- Two No. 5 (AA) alkaline batteries can work continuously for 22 hours.
- Sensitivity is dB12 higher than the previous generation PM5Gen2.
- Measurement modes: Pulse - echo, Echo - echo, Interface - echo, Multi - wave calibration.
- Measurement points: Wave side, Wave peak, Pre - zero, Post - zero.
- 60 dB analog gain + 6.5 times digital gain. Digital gain can amplify signals, and the maximum amplification of 650% can also be achieved to avoid signal saturation.
- Time - variable gain (TDG) function, the slope starting point can be adjusted automatically or manually. TDG can reduce the blind zone of the excitation pulse or interface wave, optimize near - surface resolution and minimum thickness measurement.
- Automatic gain control (AGC), with TDG and conventional automatic gain control modes.
- Indexed sound velocity, real - time wave display during the process, and waveform adjustment is available.
- Material sound velocity table, with 52 common material sound velocities.
- Pause function, calibration can be performed on the frozen waveform, measurement mode can be changed, and various parameters such as gain, range, position, gate, and mute can be adjusted.
- One - key zoom unit, quickly find/enlarge the waveform.
- Measurement units: mm, in, um, mils.
- Inspection wave: Radio frequency, Half - wave radio frequency, Positive half - wave, Negative half - wave, Full wave.
- Upper/lower limit alarm mode, supporting thickness, sound velocity, and transit time.
- With minimum/maximum value mode, difference/reduction ratio mode.
- Echo intensity indicator, which can grasp the echo height of the measurement point on the large digital interface.
- Time - base B - scan, converts thickness values into cross - sectional images in real - time for observing the internal corrosion profile of the workpiece.
- Full - screen display function, one - key switch, and the display area of the waveform is increased by 20%.
- Developed specifically for convenient data recording, the "A - scan + storage grid" view.
- Can store 100,000 measurement values, 400 groups of configuration storage.
- Equipped with a DataView interface software based on Windows.
- Designed to meet the IP67 dust and water resistance rating (1 meter underwater, soaked for 30 minutes).
- Comes with a rubber protective sleeve with a stand.

## Powerful Application Functions

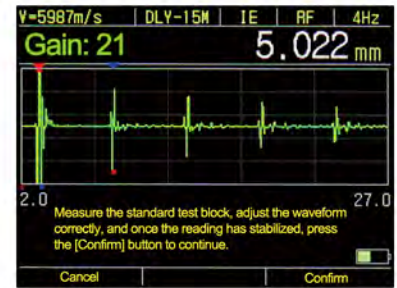
All models of the Phe PM5 Gen3 ultrasonic thickness gauge has a built - in data recorder, providing users with an efficient and convenient data storage and transmission solution.M5 Gen3 ultrasonic thickness gauges feature the following measurement interfaces. With a professional and meticulous design, the operation is intuitive and simple. Even non - professional personnel can quickly master it, easily obtain stable and reliable high - precision measurement data, and perfectly meet the challenges of various industrial inspection scenarios.The PM5Gen3 ultrasonic thickness gauge has a built - in data recorder, providing users with an efficient and convenient data storage and transmission solution.The PM5Gen3 ultrasonic thickness gauge has a built - in data recorder, providing users with an efficient and convenient data storage and transmission solution.



A Full-screen Interface



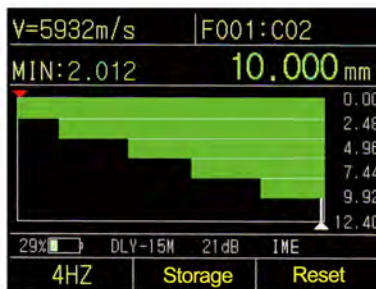
A Scan the raster interface



Guided Calibration Interface



Large Digital Interface



Time-based B-scan Interface

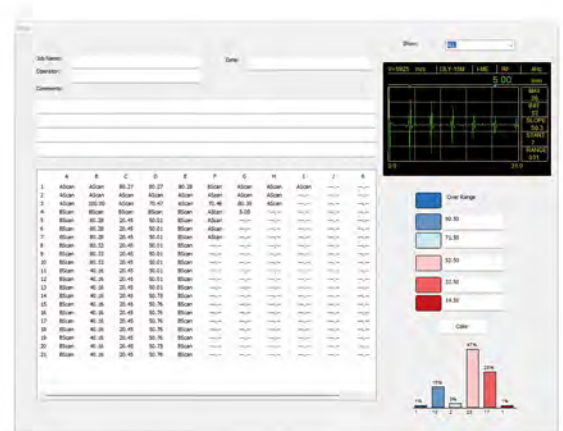
001	A	B	C
01	1.000	ASCAN	BSCAN
02	2.000	4-LYR	OXIDE
03	3.000	5-LYR	COAT
04	5947	5945	3-CH
05	1.346	3.032	4-CH

Storage Interface

## Data Recorder & PC Interface Program

The PM5Gen3 ultrasonic thickness gauge has a built - in data recorder, providing users with an efficient and convenient data storage and transmission solution.

- **Large - capacity storage space:** It can store 4000 files and 100,000 measurement values.
- **User - defined configuration file storage:** It can store user - defined configuration files with 400 sets of all parameters and waveforms. Users can save the adjusted measurement parameters and measurement results at one time. During subsequent inspections, historical parameters can be directly recalled without re - setting, which greatly improves the inspection efficiency.
- **Simple grid file management system:** Parameters, waveforms, and measurement data are stored together, making it more convenient to view and search.
- **Windows - based DataView interface software:** It is used to export the data stored in the thickness gauge, conduct data management and analysis, set alarms, print, or save to Excel format files.



DataView Software Interface

# PM5 Gen3 Functional Options

The PM5 Gen3 series ultrasonic thickness gauges are developed with the core of helping customers solve thickness - measuring challenges. Rich functional options have been developed to meet the needs of different industries, and users can flexibly select them according to actual application scenarios.

- ◆ High Frequency & High Resolution
- ◆ Automatic Freezing
- ◆ Large Range Mode
- ◆ Double - Crystal Probe
- ◆ High - Speed Measurement & Synchronous Directional Display
- ◆ Window Mode & Adjustable Sampling Rate
- ◆ Directional Focusing
- ◆ Bluetooth
- ◆ Noise Reduction & Damping
- ◆ Dual - Layer Software
- ◆ Temperature Compensation
- ◆ System Integration & Remote Control
- ◆ Ultrasonic Velocity & Transit Time Measurement
- ◆ Internal Oxide Layer Measurement Software
- ◆ Multi - Layer Software
- ◆ Four - Channel Option

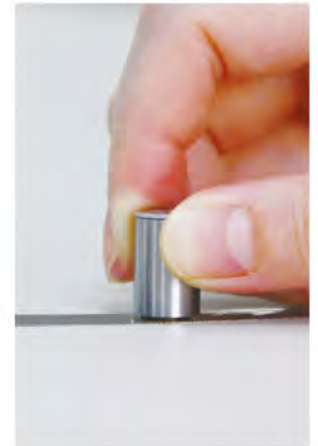
## High - Frequency Option

It supports ultrasonic frequencies of up to 75 MHz and is compatible with 3.0 MHz, 5.0 MHz, and 75 MHz high - frequency probes, suitable for measuring the thickness of ultra - thin materials, coatings, and multi - layer structures. When using a 5.0 MHz probe, the lower limit of measurement in steel is 0.05 mm.

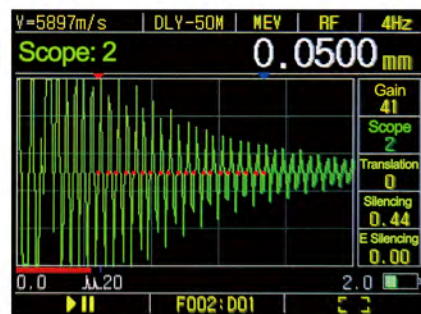


## 0.0001mm Resolution

The MEV mode has a maximum display resolution of up to 0.0001 mm, 0.1 μm, 0.00001 in., and 0.01 mils, suitable for high - precision measurement of thin workpieces.



75MHz Probe Measuring Aluminum - Copper Composite Material



50MHz Probe Measuring 0.05mm Thin Sheet

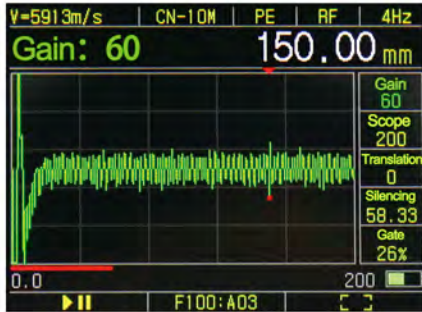
## High - Speed Measurement & Synchronous Directional Display

With background high - speed measurement, the front - end screen displays at a reduced rate synchronously. 8 display schemes can be set. True high - speed visualization is achieved, with no missed scans. Combined with the window mode measurement rate of up to 24 kHz, it can be adjusted in steps of 16 Hz.

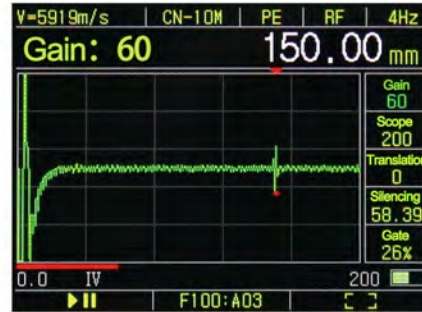
### Noise Reduction and Damping

The noise reduction function significantly improves the signal-to-noise ratio, making it especially suitable for high-sensitivity applications such as laminated thickness measurement of clad steel (carbon steel/stainless steel) and testing of high-attenuation materials.

Damping settings can be selected as high, low, or default, optimizing the probe's sensitivity and resolution.



Noise reduction off



Noise reduction on

### Sound Velocity Measurement & Transit Time

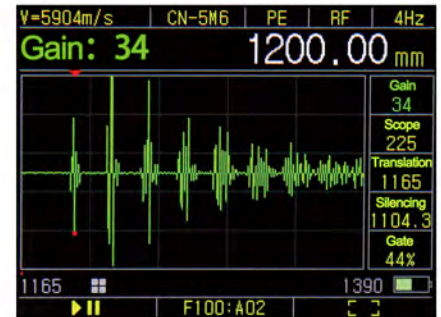
Capable of measuring material sound velocity and transit time, with functions including alarm, maximum/minimum value display, difference/percentage calculation, and data storage. Sound velocity units are available in m/s or in/ $\mu$ s, while transit time units can be set to ns or  $\mu$ s. Typical applications include nodularity testing of cast iron, bolt stress measurement, and monitoring changes in material density.

### Window Mode

The start point and duration of data acquisition are adjustable, corresponding to the shift and range of the display window, respectively. In steel, the maximum shift distance can reach up to 62 meters. This function can be used to expand the measurement range or improve measurement speed.

### Adjustable Sampling Frequency

The sampling frequency can be set to 200 MHz, 100 MHz, 50 MHz, or default, allowing optimization of measurement accuracy and measurement range.



Thickness measurement of 1200mm-long steel bars



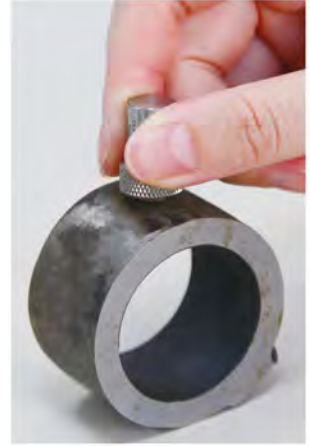
### Dual-Layer Software

A powerful dual-layer software enables simultaneous measurement and display of the thickness of two material layers. The A-scan waveforms of each layer can be viewed and adjusted separately, as if two instruments are measuring at the same time. The software also integrates multi-scan and time difference measurement functions. Typical applications include double-layer composite plates and metal materials with coating layers.



### Inner Wall Oxide Layer Measurement Software

The standard 15 MHz probe provides an oxide layer measurement lower limit of 0.25 mm. A 20 MHz shear wave probe offers higher resolution, with a minimum measurable oxide layer thickness of 0.15 mm. For thick-walled pipes, a 10 MHz, 6 mm contact probe is recommended.



Double-layer thickness measurement of copper-aluminum composite plates



Measurement of oxide scale wall thickness

### Long Range Mode

A composite measurement mode based on the pulse-echo method, with a display range of up to 38 meters. It focuses on achieving large-range thickness measurement while maintaining high accuracy.

### Auto Freeze

Supports four trigger conditions: maximum echo, consecutive counts, echo counts, and target thickness range. The waveform is automatically frozen when all trigger conditions are met simultaneously.

### Bluetooth

Enables wireless transmission of real-time measurement values to computer or mobile applications. Cross-platform data transfer can be achieved without installing additional software, supporting Windows, Android, and iOS systems.

## Temperature Compensation

The sound velocity of materials varies with temperature, which affects measurement accuracy. The temperature compensation function automatically performs compensation calculations based on the input calibration block temperature and the actual workpiece temperature, and displays the corrected and accurate thickness value.



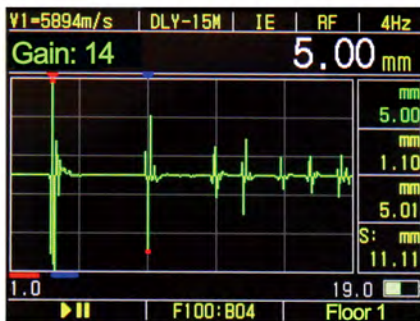
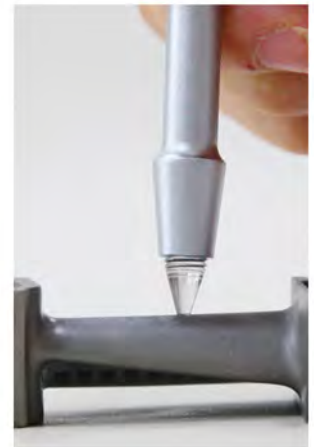
## Multi-Layer Software

A powerful multi-layer software package (including all functions of the dual-layer software) based on patented multi-echo measurement technology. It can simultaneously measure and display the thickness of up to five independent layers. The system also supports calculation and display of the total thickness of any combination of multiple layers, and integrates advanced functions such as multi-scan and time difference measurement, enabling precise measurement of complex multi-layer structures.

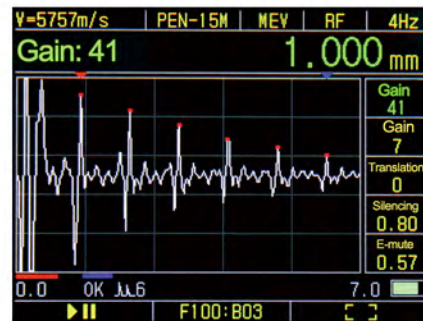


## Directional Capture

Provides five selectable target capture modes (minimum value, maximum value, highest echo, maximum consecutive counts, and maximum echo counts), with support for automatic or manual display of capture results. It enables precise capture of target thickness values and waveforms during high-speed scanning, high-temperature thickness measurement, and curved surface measurement.



Measurement of multi-layer thickness of laminated glass



Measurement of turbine blade thickness

## Dual Probe Option

Supports all functions of dual-element transducers, including both pulse-echo and echo-echo measurement modes, as well as automatic V-path error correction.

Dual-element probes are suitable for corrosion thickness measurement of metals. The pulse-echo mode is ideal for measuring uncoated materials, while the echo-echo mode can penetrate coatings to measure the thickness of the underlying metal substrate.

## System Integration & Remote Control

**Real-time Communication:** Users can integrate the PM5Gen3 thickness gauge into their own systems via wired or wireless communication, enabling real-time transmission of thickness values, waveforms, and parameters. The device supports USB power supply.

**OUStation Thickness Measurement Software:** By connecting the PM5Gen3 to a PC, laptop, or tablet installed with OUStation software, it can be configured as a dedicated thickness measurement workstation, offering the convenience of a large touchscreen display and enhanced processing capability for improved efficiency.

**WiFi:** Supports dual-mode WiFi (master/slave). Even without an external network, the device can connect to a computer or tablet in master mode. When combined with the real-time communication option, it enables high-speed wireless data transmission.

**Wireless Data Transmission:** In open environments, the maximum communication distance can reach up to 2500 meters, with a transmission speed of 115200 bps.



UStation Software Interface

## Four-Channel Option

Based on multi-echo measurement technology, the PM5Gen3 can be connected to the optional MX-4 multiplexer, enabling simultaneous display of thickness values measured by up to four different probes. The A-scan waveform of each channel can be viewed and adjusted individually, with each channel featuring 28 independent parameters. When not connected to the MX-4, the PM5Gen3 functions exactly the same as a standard thickness gauge.

