

Acoustic Concrete Tester (ACT)

The Acoustic Concrete Tester (ACT) accurately measures the thickness of concrete structural components such as pavements, slabs, retaining walls, tunnel linings, and foundation footings. Additionally, it can measure the propagation velocity of materials. ACT is applicable to thicknesses ranging from 75 to 900mm.

ACT utilizes refined pulse echo technology for measuring concrete thickness.

With ACT, there is no need for adjusting input signals, measuring material propagation velocity, or drilling holes.



Place two probes on the surface of the member.

Touch the touch panel to send a signal.

The thickness of the member is instantly displayed on the screen.

The propagation velocity of the wave is also displayed.

Save the measurement results to a memory card.

ACT is equipped with a lightweight body, an easy-to-read display, and a battery that allows for a full day of operation.



<Measurement Principle>

There is a one-to-one correlation between the resonance frequency of a structural member and its thickness.

ACT easily distinguishes the resonance frequency.

The transmitting probe of ACT electronically emits a wide range of impact pulses, including the resonance frequencies of concrete members with various characteristics. Most pulses dissipate, but only pulses that match the resonance frequency of the concrete member are amplified and detected by the receiving probe.



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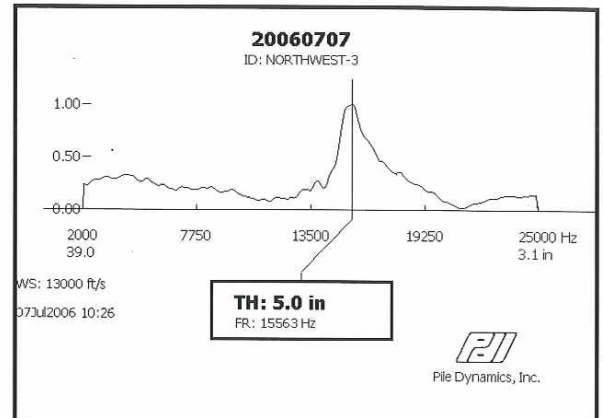
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ACT Specifications

Size	75 x 175 x 235 mm
Weight	2.2 kg
Display	Large backlit touch screen
Operating temperature	0 ~ 50°C
Storage temperature	-20 ~ 65°C
Battery	Built-in type 8 hours Charging time 3 hours
Probe material	Brass
Probe size	φ 60 x H45mm
Cable length	2.4m
Receiving frequency	2~30kHz

Processor	PXA 225 XSCALE 400MHz
Data storage	Flash memory card 128 MB or more
AD Converter	24bit 1MHz or more Net 192kHz Error 0.01% or less

Real-time frequency analysis results with FFT
Storage of display data in BITMAP files
Customizable user logo on the screen display
1 year warranty



<ACT Pulse Echo Technology>

ACT utilizes pulse echo technology, which has evolved from traditional impact echo techniques. The pulse echo method is based on using a transmitter that emits a wide range of vibration signals onto the concrete surface. Unlike the mechanical impacts used in impact echo methods, the pulse echo transmitting signal is not affected by the condition of the concrete surface and contains all necessary frequencies. This enables the measurement of members with a wide range of material properties and thicknesses using the same sensor.

The pulse echo transmitting signal travels through the concrete, causing repeated reflections depending on the concrete thickness. These reflected vibrations are processed by high-frequency sampling and converted into natural frequencies through real-time FFT analysis. This allows for the determination of natural (resonant) frequencies that correlate to twice the propagation time of the shortest path through the member or twice its thickness. If there are discontinuities in the member, such as crushing, thin layer separation, or horizontal cracks, additional frequencies added by these discontinuities can be identified.

ACT can also measure the propagation velocity of the material's waves in members where the thickness is unknown. This eliminates the need to rely on estimated propagation velocities or to drill holes for reverse calculation of propagation velocity. This characteristic dramatically improves the applicability and reliability of the equipment and its results.



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