

A5000UM

:: METHODOLOGIES ::

Sonic test
 Ultrasonic Pulse Velocity

Ultrasonic Pulse Velocity + Sonic Test with instrumented hammer



Instrumentation for the execution of non-invasive surveys of sonic and ultrasonic type with an electro-mechanical hammer operating on concrete structures, masonry and on various types of building materials on site and in the laboratory. The extensive spectrum of incoming frequencies analysed, allows to take measurements on materials with different mechanical, compactness and homogeneity characteristics.

The ultrasonic test through transparency is a standardized system in the diagnostics sector of concrete structures. From the analysis of the compression waves P in the material, it is possible to obtain the transit time (airborne time T.O.F.) of the ultrasonic waves in the material and the transmission speed of the same waves inside the material tested. The use of this method at high frequencies is particularly suitable for compact materials, as hardened concrete and on structural elements such as trusses, partition walls, or other types of concrete structures or stony materials with good aggregation degree.

The sonic surveys are carried out using an electro-mechanical hammer that acts as trigger and a receiving probe. Waves on the material to inspect are generated on the trigger hammer, which are then detected by

the receiving probe and recorded in the central unit. The sonic method is extensively used in tests of materials with scarce propagation characteristics, non-compact and heterogeneous materials in which the distances to travel are fairly high and they cannot be reached with the ultra-sonic system at other frequencies.

A5000UM allows to assess the mechanical characteristics of the materials, evaluate the degree of homogeneity and possible presence of holes, gaps, defects or building anomalies of the element. Masonry structures, brick-faced walls, historic and monumental buildings can be assessed in terms of conservation state, in a quick and easy manner, limiting as much as possible the execution of destructive tests. Thanks to the presence of a large graphic display, the visualization and interpretation of the ultra-sonic waves generated is easy and immediate, the first reading can be picked and the speed and quality values of the material tested can be read directly on the device display. Each single wave emitted by the internal generator is visualized in full and it is also possible to modify the visualization parameters to further

facilitate the reading of the crossing speed. The data is saved on a removable S.D. memory.

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SPECIFICATIONS

Acquisitions:

- Signal range: ± 2.5
- Time bases: 1 μ s, 10 μ s, 50 μ s
- Amplifications: 30dB – 62dB
- Sample resolution: 12 bit
- Samples per event: 640
- Band width: 200kHz
- Filter for ultra-sounds: central frequency 50 kHz
- Channels: 1 TX, 1 RX
- Methods: manual (with button) or automatic (repetitive in time)

Probes:

- Resonant frequency: 53 kHz or 21 Khz
- Diameter: 48 mm (53 kHz) ; 100 mm (21 kHz)
- Excitation peak voltage: 500V (normal), 2000V (high)
- Maximum frequency for pulse emission: 1 per second

Hammer:

- Trigger: piezoelectric
- Shutters: in plastic and metal

General data:

- Recording support: removable SD memory up to 2 GB
- Data format: TSV, BMP
- Keyboard: 24 charge-transfer buttons
- Display: mono-chromatic graphic LCD 320 x 240 pixel
- Measures display: numeric and graphic
- Power supply: internal batteries AA type rechargeable and replaceable (12V – 2.5Ah)
- Typical consumption: 90mA idle, 170mA when taking measurements
- Container: anti-crash, in copolymers of polypropylene
- Operating temperature: 0-60°C
- Sizes and weight: L. 270 x H. 120 x P. 246 mm, 3 Kg



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