All-in One

Non-destructive testing instrument All-in One - Ultrasonic for Concrete structures, Sonic investigations for masonry, Pile Integrity Test (PIT), Cross-Hole on foundation piles

A single acquisition unit that, by purchasing different specific and modular “Kits”, enables the execution of **sonic and ultrasonic tests** for on-site and laboratory characterization of materials such as concrete, masonry, and natural stone, as well as cross-hole tests, PIT (Pile Integrity Test) on foundation piles and diaphragms, and tension force evaluation on chains and tie rods (SoITiRo).

Contact Kit / MCHA kit / PIT kit

The All-in-One system is a robust and reliable device equipped with various piezoelectric sensors and dedicated probes. It features a multichannel A/D board with selectable sampling frequencies ranging from 10 kHz to 6.25 MHz (up to 12.5 MHz single-channel). All acquired signals are displayed, processed, and saved directly on the pre-installed software on the tablet. Connection between the All-in-One unit and the tablet is via WiFi.

NOVATEST
Engineering Solutions

Contact us for: purchase, rental, quote.

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Product advantages:

- 3-probe system
- Drastic reduction in acquisition time
- Smart probes, including signal generation and active preamplification
- Pipe spacing up to 3 m
- Acquisition unit with high dynamic range and low electronic noise
- Ultrasonic contact probes (55–20 kHz) with hammer, dedicated software
- Durable and reliable equipment
- Echo and low-deformation methods, processing software included
- Fully compliant with major international standards

Application:

- Characterization of concrete, masonry, and natural stones both on-site and in the lab
- Integrity assessment of foundation piles and diaphragms using Cross Hole technique
- Integrity assessment of foundation piles using PIT technique
- Tension force evaluation in structural chains and tie rods (SolTiRo)

KIT SolTiRo:

The **SolTiRo KIT** enables non-destructive measurement of the tensile force in structural chains, especially useful in historic buildings. The system is based on the analysis of vibrations generated by an impulse, allowing the identification of natural frequencies and calculation of the acting tension. The **SolTiRo software** processes data based on the geometric and mechanical parameters of the element and its boundary conditions, providing a safe and accurate analysis of the tensile state. The kit includes acquisition instruments, accessories, and a user guide with safety measures.

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Tachnical features:

Channel	2 inputs / 1 trasmitter
Converter type	2-channel 12-bit A/D
Input type	Differential / Single-ended / IEPE
Input range	+/- 5 Vpp
Amplification	Software-selectable range from 1 to 40000
Pretrigger	Selectable, 0–2000 samples (1CH); 0–1000 samples (2CH)
Sampling rate	10KHz a 12,5 MHz (12,5MHz/1Ch – 6,25MHz/2Ch)
Samples per event	Up to 8K samples per channel
Travel time resolution	80 ns
Sample resolution	12 bit@12.5MHz a '16bit@ 50KHz (with oversampling)
Bandwidth	> 1 MHz tipo @ gain 10
Anti-aliasing filter	Selectable digital filter (DSP)
Tigger	Hardware, software, threshold (selectable)
Transmitter voltage	From 100V to 1200V
Pulse duration	Selectable from 1 to 65000 µs
Pulse repetition rate	> 20 meas/s
I/O	WiFi 802.11 (100m)
Transducers	Piezoelectric type (see TRANSDUCERS table)
Power supply	Internal LiFePO4 battery (4.5 Ah)
Charging	External charger – recharge time 4 h
Power consumption	1.8W Stand-by / 2.8W Active Ultrasound
Battery life	> 35 h in stand-by / 20 h operational
Case	IP 65
Operating temperature	0-60°C
Dimensions and weight (LxWxH)	320 x 212 x 96mm, weight 2,5 kg

Transducers

Borehole	Transmitter / receiver
Diameter	26 mm
Length	150 mm
Wall-mounted receiver sensor	55 KHz
Wall-mounted transmitter sensor	55 KHz
Wall-mounted transmitter sensor	20 KHz
Instrumented hammer with accelerometer	bandwidth 1/10 kHz, sensitivity 1
Accelerometer	bandwidth 1/10 kHz, sensitivity 100 mV/g

Accellerometro TA50g (SolTiRo)

The accelerometer is supplied with a special magnetic support, it is possible to fix it using cable ties or other restraint systems. Optionally, a fixing system with a C-bracket and adjustable fixing screw is available.

Weight	50g
Sensitivity	100mV/g
Linearity	<1% F.S.
Frequency range	0,5 Hz ÷ 10 kHZ
Transduction range	± 50g
Temperature range	-30 ÷ 60°C
Connection cable	Standard 3m

Accessories:

Contact Kit

- Compliant with: UNI EN 12504-4, ASTM D2845-08, ASTM C597-02
- Sonic and ultrasonic measurement frequency: 55 kHz or 20 kHz, highly sensitive active piezoelectric receivers
- Suitable also for wooden samples
- Integrated instrumented hammer

PIT Kit

- Compliant with: ASTM D5882-07
- PIT hammer and accelerometer
- Low-strain integrity and Echo methods
- Solgeo “PPS” software included

Kit MCHA

- Compliant with: ASTM D6760-16
- Simultaneous cross-hole measurements along three paths in pile foundations
- Synchronization pulse via encoder
- Results readily printable
- High-power transmitter and high-sensitivity active piezoelectric receivers (Selectable 50–80 kHz)

KIT SolTiRo

The accessory equipment supplied with the All-in-One acquisition unit includes the TA-50g accelerometer. The system thus includes:

- All-in-One acquisition unit
- PC/Tablet
- Accelerometer