



All-in One | Ruggedized Ultrasonic & Sonic Concrete NDT Test System

**Ultrasonic Pulse Velocity Tester for Concrete |
Ultrasonic and Sonic Testing with Tomography |
MCHA Cross-Hole | Pile Integrity Tester**



All-in One is a highly ruggedized modular Ultrasonic test kit system that can be configured for checking homogeneity of concrete structures, piles & diaphragms foundation. The instrument is designed for construction, building and geophysical research industry and is available in following configuration options which are future upgradeable for performing the below tests:

1. **Contact KIT 2: Ultrasonic pulse velocity test measurement** based on 2 nos 55 kHz (default) transducers for checking homogeneity of concrete structures
2. **Contact KIT 3: For Ultrasonic and Sonic test** measurements on concrete, masonry and stone structures based on 1x55 kHz transmitter and 2 x 55 kHz receivers & instrumented sonic hammer with option for further **tomographic elaboration**. **Contact 3 kit is ideal for large structures.**
3. **MCHA kit** for Ultrasonic **cross-hole sonic logging test** for checking posts and diaphragm in deep foundation/ piles.
4. **P.I.T.** for pile Integrity Test through vibrational methods such as Echo test and low strain integrity method.

All in one kit are designed for consultants or end users to get efficient return on investment. Based on project, the equipment can be used as a UPV or pile tester or cross-hole, ensuring the same equipment & or its components find application for a variety of test requirement.

Quality in Concrete. Delivered.

All in One Controller: The HEART of The System



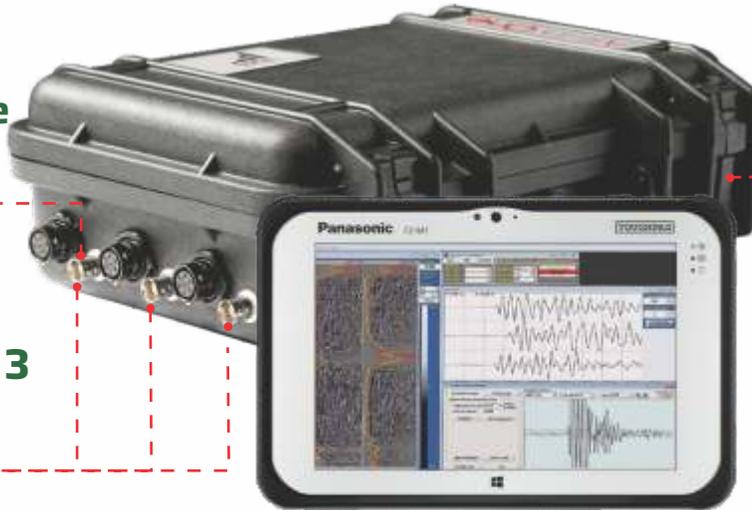
Characterized by an A/D board **multichannel** and selectable sampling rates from 100Hz-10MHz. All acquired signals are displayed, computed and data logged directly on tablet with pre-installed software. Connection between All-in One System and tablet is via **WiFi**.

All-in One System is highly ruggedized for on site work in any field condition.

Multichannel Controller (3 Channels)
High Sampling Rate: 100Hz~10MHz

**Military Grade
Connections**

**Connect 2 or 3
Transducers**



**IP65 Impact
Rated Casing**

Kit Contact 2: Ultrasonic Pulse Velocity Tester

All in one contact 2 kit is ideal for consultants & construction companies performing on site quality control testing & checking homogeneity of concrete on building structures for new & existing structures.

- Conforms to UNI EN 12504-4 ASTM D2845-08 and ASTM C597-02 standards
- CONTACT-APP software for data acquisition & storage
- 2 nos transducers including 1 nos Ultrasonic transmitter Tx 55 kHz with 5m cable length and 1 nos Ultrasonic receiver Rx 55 kHz with 5m cable length
- Test sample, transport bag
- Android ≥7" TABLET
- Upgradeable to Contact 3 Kit; MCHA Cross-hole kit or pile integrity test Kit
- **Ordering code: All 1.V1+All 1.C2**



+
**Long 5 meter cables
provided for use with
transducers for easy on
site usage.**



Kit Contact 3 : Sonic and Ultrasonic Test Kit



- Conforms to UNI EN 12504-4 ASTM D2845-08 and ASTM C597-02 standards
- CONTACT-APP software for data acquisition & storage
- 3 nos transducers including 1nos Ultrasonic transmitter Tx 55kHz with 5m cable length and 2 nos Ultrasonic receivers Rx 55kHz with 5m cable length
- Test sample
- **Instrumented Hammer Transmitter** for sonic test
- Android ≥7" TABLET
- **aTom Tomographic elaboration software**
- **Note:** Contact 3 System offered is further future upgradeable to cross-hole sonic logging test or pile integrity test by addition of necessary elements.

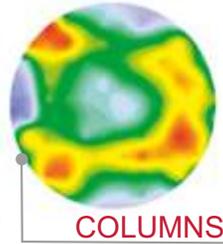
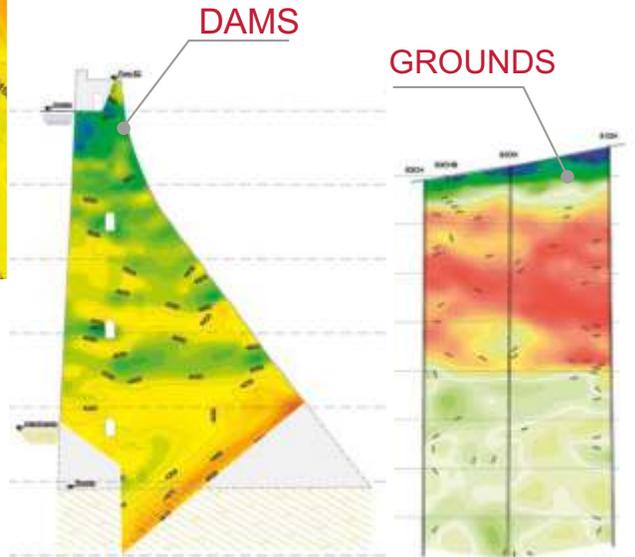
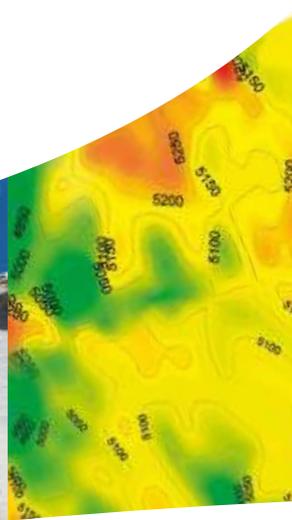


Illustration of use of Kit Contact 3

Kit Contact 3 is Available in 2 Versions :

Version 1	All 1.V1 + All 1.C3	Kit includes 1 Tx 55kHz & 2 Rx 55kHz transducers for multi channel acquisition of signals for tomography of concrete structure elements such as columns, walls, samples & large building structures provided complete with aTom Tomographic elaboration software & android ≥7" tablet.
Version 2	All 1.V1 + All 1.C3+ MA.01+ Fz M1	Kit includes 1x Tx 55kHz, 2x Rx 55kHz transducers, aTom software + Sonic Hammer for testing on large structures (beyond capability of Ultrasonic transducers). Ruggedized Panasonic windows Fz-M1 tablet also provided.

aTOM Tomographic Elaboration Software



Applications:

- Tomographic processing on concrete
- Tomography processing on dams
- Cross-hole tomographic processing in soils

aTOM Software is aimed for tomographic processing from ultrasonic, sonic and seismic data

PRINCIPLE Velocity fields are obtained running an iterative algorithm

SIRT Simultaneous iterative reconstruction technique

aTOM'S Working Steps :

<p>1. </p>	<p>2. </p>	<p>3. </p>	<p>4. </p>	<p>5. </p>
<p>Preliminary Data Analysis aimed to select ray paths to be elaborated, excluding outliers</p>	<p>Create Perimeter & Mesh investigated area to be processed is defined by transmitters & receivers points. This area is split as rectangular grid (each node has a specific velocity value)</p>	<p>Computing Ray Paths elaboration is iteratively performed and "best fitting" travel times from transmitters to receivers are computed</p>	<p>Checking Histograms further, to get a more reliable calculated model, clearing histograms is also possible</p>	<p>Tuning Results results are showed as tomograms, which shows the variations of the velocity field</p>

Software Benefits:

- Easy and quick to use
- Wizard processing procedure
- Any type of geometry
- Many application fields
- Immediate exportation results
- Automated downloading procedure

Kit P.I.T.



Pile Integrity Testing

- Conforms to ASTM D5882-07 standard
- Low strain Integrity and echo method
- Equipped with PIT-Hammer and Accelerometer
- "PPS" software included
- Ruggedized Panasonic Fz-M1 tablet with windows pre-installed software provided



+



All in One Pile Tester is

Offered in Two Module Options

Option 1	All 1.V1 + All 1.P*	All in one controller with PIT kit for performing echometric tests & mechanical admittance, low strain provided with Fz-M1 Panasonic ruggedized tablet
Option 2	All 1.P*	Upgrade kit to pile tester for those users who already possess All in one contact 2 or 3 or MCHA kits

Note* : All 1.P includes Fz M1 tablet as part of kit.



Kit MCHA

Ultrasonic Cross-Hole Testing

All-in One system MCHA Cross-hole Tester is an Ultrasonic cross-hole testing kit, also referred to Ultrasonic cross-hole Sonic logging system. MCHA is used to check the homogeneity of the concrete used in pile foundation.

It is an NDT method which involves measuring the propagation time of ultrasonic signals transmission through the pile between two similar water-filled tubes.

The Cross-hole Sonic Logging method is an ultrasonic test that involves measuring the propagation time of ultrasonic signals between two probes in the vertical tube in a shaft. It is an NDT method that consists of ultrasonic signal transmission through the pile between two similar water-filled tubes.

The difference in the signal coming time permits one to calculate and identify areas of low compactness of concrete. For the case of good concrete, pulse velocity is on the order of 4000m/sec, depending on its ingredients. Concrete consists of soil, gravel, betonies or honeycombing which causes lower propagation velocity so that the presence of these irregularities is immediately observable.



Kit MCHA

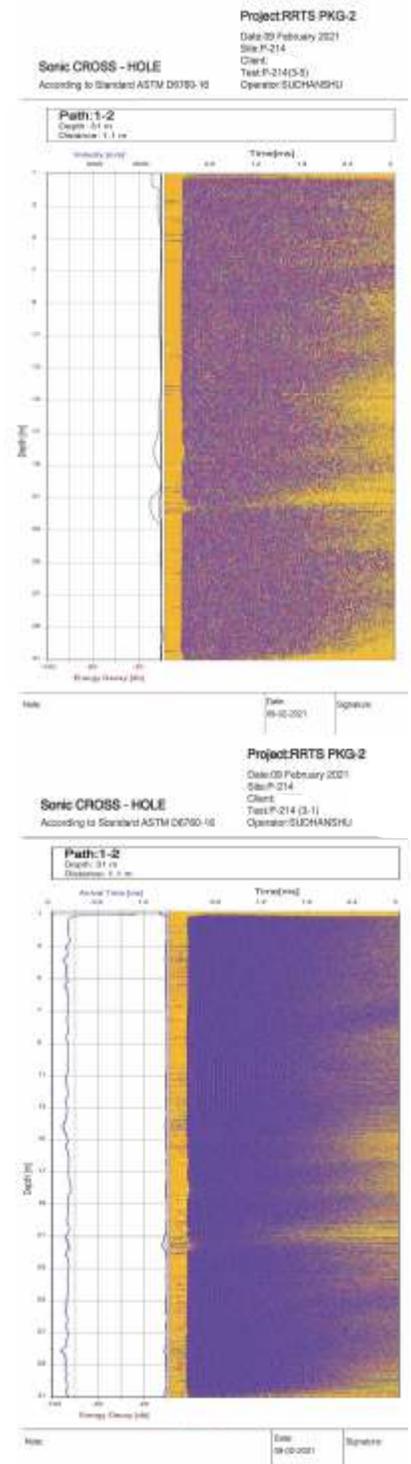
Ultrasonic Cross-Hole Testing



Report Example :



- **Conforms to ASTM D6760-16 standard**
- **Simultaneous Cross-hole measurements along three paths in pile foundation**
- **Synchronization impulse using an encoder**
- **Result reports can be generated & printed promptly**
- **High power transmitter and high sensitive active-type piezoelectric receivers (50 or 80 kHz)**
- **Ruggedized tablet with window pre-installed software**



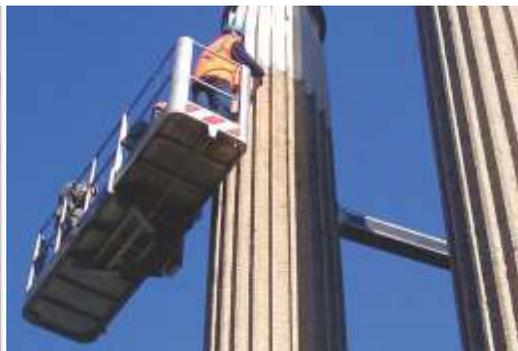
Item code	Kit version	No. of transmitter (Tx) and receiver (Rx) probes	Cable rollers (nos) & length	Link cable probe wheel/ control unit & pulleys	Other accessories included
KV-ALL1.M2	MCHA 2	2 probes: 1 x Tx, 1 x Rx	2nos, 60m	2nos	1 x Encoder, 1 x link cable Encoder/ control unit, 1 x Cable driver, 1 x tripod, 1 x transport case, 1 x ruggedized tablet windows
KV-ALL1.M2.100	MCHA 2	2 probes: 1 x Tx, 1 x Rx	2nos, 100m	2nos	
KV-ALL1.M3	MCHA 3	3 probes: 1 x Tx, 1 x Rx, 1 x Tx / Rx probe	3nos, 60m	3nos	
KV-ALL1.M3.100	MCHA 3	3 probes: 1 x Tx, 1 x Rx, 1 x Tx / Rx probe	3nos, 100m	3nos	

All in One

Specifications:



Channel	3 Channel Receiver (2 input/ 1 transmitter)
Converter Type	2 A/D x 12 bit converter
Input Type	Differential/ Single ended/ IEPE
Input Voltage	± 5 Vpp
Amplifier	1 to 1024 software selectable
Pretrigger	Selectable, 0 to 80%
Time Base	50kHz to 10MHz (10MHz/1Ch - 5MHz/2Ch)
Sample Per Event	1K to 8 K for channel
Travel Time Resolution	100ns
Sample Resolution	12 bit@10MHz to >16 bit@ 50kHz (with oversampling)
Bandwidth	> 1MHz
Filter	Antialias, Digital custom filter selectable (DSP)
Trigger Type	Software
Voltage Out Transmitter	Selectable, 100 V to 1200 V
Pulse Duration	Selectable, 1 to 65000µS
Transmitter Pulse Repetition	> 20 measurement/second
I/O	USB 2.0/ WiFi 802.11 (100m)
Transducer Options	Piezoelectric-Type:
	- Receiver Sensor (wall-type): 55 kHz
	- Transmitter Sensor (wall-type): 55 kHz
	- Transmitter Sensor (wall-type): 20 kHz
	- Hammer with accelerometer
	- Accelerometer Dytran
	- Hole-Probe: Transmitter/ Receiver Diameter 26 mm; Length 150 mm; 50 kHz or 80 kHz
Recharging Time	4hours
Power Consumption	0.8W Standby / 1.6W Ultrasonic active
IP Rating	IP65
Autonomy	> 35hours
Power	Internal battery LiFePO4 (6Ah)
Temperature	0-60°C
Size	Length 32cm, size 21 x 21 x 9 cm
Weight (kg)	2.5



All-in One is manufactured by SolGeo S.r.l. Italy. SolGeo S.r.l. is a manufacturer of technological instruments for geophysics investigation & monitoring of structures & soils. Instruments are manufactured at Seriate, Italy.



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