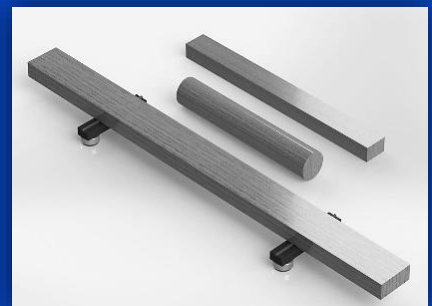
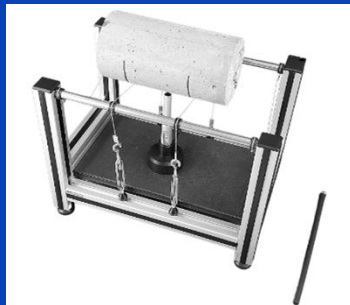
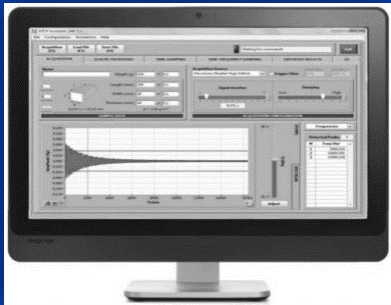


Sonelastic® Systems

Catalog



ATCP Physical Engineering

Sonelastic® Division

www.sonelastic.com

Version 1.9
February / 2025

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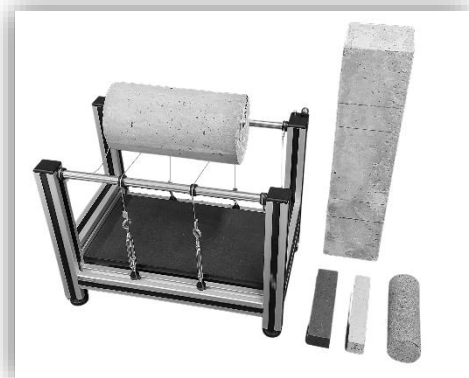
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SA-BC

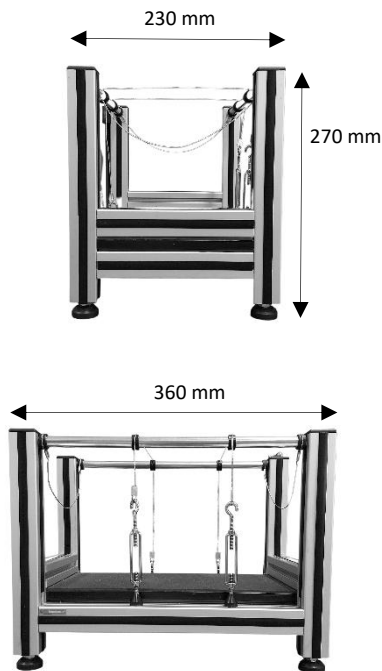
Adjustable support for bars and cylinders

Features:

- Developed for the Impulse Excitation Technique (ASTM-E1876) and Sonelastic® Systems.
- Suitable for rectangular bars and cylinders with length between 100 and 450 mm and weight up to 30 kg (66 lbs).
- Optimum for flexural vibration mode.
- Allows tests on longitudinal and torsional vibration modes.
- Manufactured with stainless steel rods and anodized aluminum.
- Available in manual and automatic configurations.



Dimensions:



Typical configurations:

Manual:

- **Parts:**
 - SA-BC Adjustable Support;
 - CA-DP Acoustic Sensor with vertical base.
- **Accessories:**
 - Set of spare support-cables;
 - Height-adjusting disc;
 - Medium Manual Impulse Device;
 - Light Manual Impulse Device;
 - Protective cap.
- **Optional items:**
 - Sturdy Tripod.

Automatic:

- **Parts:**
 - SA-BC Support;
 - CA-DP Acoustic Sensor.
- **Accessories:**
 - Set of spare support-cables;
 - Height-adjusting disc;
 - IED Automatic Impulse Device (C. unit);
 - Medium RT Impulse Device for IED.
 - Medium Manual Impulse Device;
 - Light Manual Impulse Device;
 - Protective cap.
- **Optional item:**
 - Sturdy Tripod.

Specifications:

Model	SA-BC-G2
Manufacturer	ATCP Physical Engineering
Maximum dimensions for cylindrical specimens (L x D)	450 x 200 mm
Minimum dimensions for cylindrical specimens (L x D)	100 x 5 mm
Maximum dimensions for rectangular specimens (L x W x T)	450 x 170 x 170 mm
Minimum dimensions for rectangular specimens (L x W x T)	100 x 5 x 5 mm
Maximum weight when using Ø 0.7 mm support-cable	10 kg
Maximum weight when using Ø 1.2 mm support-cable	30 kg
Support maximum dimensions (L x W x T)	360 x 230 x 270 mm
Support weight	4.2 kg
Working temperature range	10 - 40°C (50 to 104 °F)

SB-AP

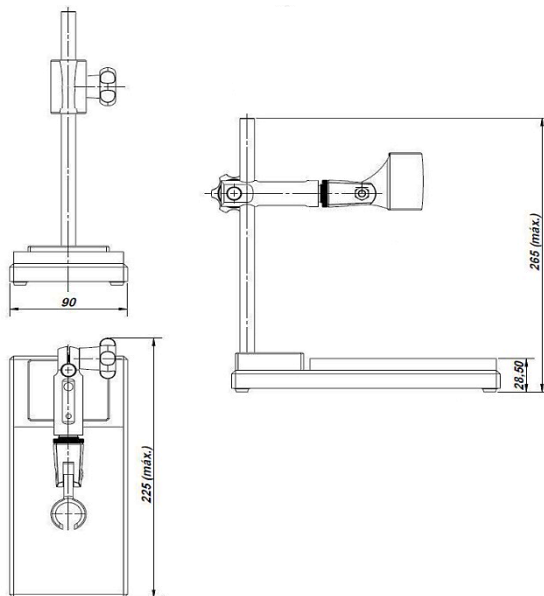
Support for small specimens and cantilever beams

Features:

- Developed for the Impulse Excitation Technique and Sonelastic® Systems.
- Allows cantilever beams characterization (ASTM-E756).
- Suitable for rectangular bars, cylinders, discs and rings.
- For flexural, torsional and planar modes of vibration on foam.
- Manufactured in stainless steel and anodized aluminum.
- Available in standard and with jaw system configurations.



Dimensions:



Typical configurations:

Standard:

- **Parts:**
 - SB-AP Support;
 - CA-DP Acoustic Sensor model CADPS.

- **Accessories:**

- Light Manual Impulse Device.

- **Optional items**

- Light RT Impulse Device (IED);
- Control unit (IED).

Cantilever:

- **Parts:**

- SB-AP Support;
- CA-DP Acoustic Sensor model CADPS.

- **Accessories:**

- Jaw system for cantilever beams;
- Light Manual Impulse Device.

- **Optional items:**

- Light RT Impulse Device (IED);
- Control unit (IED).

Specifications:

Model	SB-AP
Manufacturer	ATCP Physical Engineering
Maximum dimensions for cylindrical specimens (L x D)	120 x 60 mm
Minimum dimensions* for cylindrical specimens (L x D)	15 x 2 mm
Maximum dimensions for rectangular specimens (L x W x T)	120 x 40 x 40 mm
Minimum dimensions* for rectangular specimens (L x W x T)	15 x 2 x 2 mm
Maximum dimensions for cantilever beams (L x W x T).....	200 x 25 x 5 mm
Minimum dimensions* for cantilever beams (L x W x T)	120 x 10 x 0.5 mm
Maximum dimensions for discs and rings (D x T)	80 x 8 mm
Minimum dimensions* for discs and rings (D x T)	15 x 1 mm
Support maximum dimensions (L x W x T)	90 x 225 x 265 mm
Standard support weight	1.2 kg
Clamping support weight.....	2.1 kg
Working temperature range	10 - 40°C (50 - 104 °F)

*Note: The minimum dimensions may vary according to the elastic properties of the material and the aspect ratio of the specimen.

SX-PD

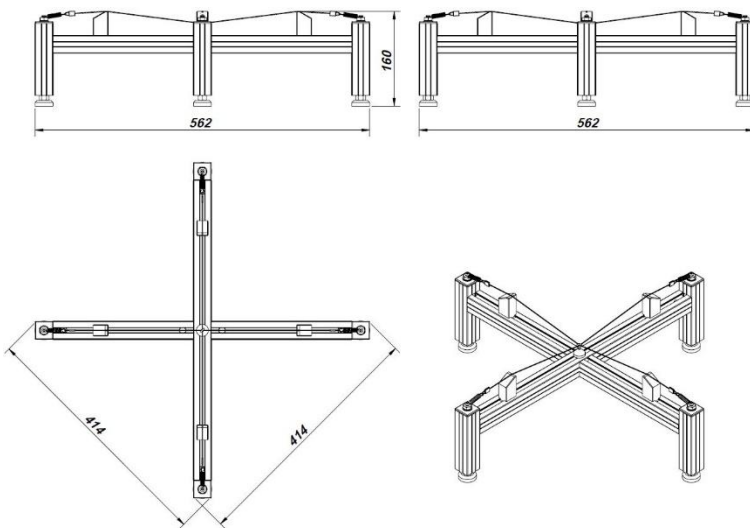
Adjustable support for discs and rings

Features:

- Developed for the Impulse Excitation Technique (ASTM-E1876) and Sonelastic® Systems.
- Suitable for discs and rings with diameter up to 380 mm and weight up to 30 kg.
- Optimum for planar vibration mode.
- Manufactured with anodized aluminum.
- Available in manual and automatic configurations.



External dimensions:



Typical configurations:

Manual:

- **Parts:**
 - SX-PD Support;
 - CA-PD Acoustic Sensor with vertical base.
- **Accessories:**
 - Medium Manual Impulse Device.

Automatic:

- **Parts:**
 - SX-PD Support;
 - CA-PD Acoustic Sensor with vertical base.
- **Accessories:**
 - Medium Manual Impulse Device;
 - IED Automatic Impulse Device (C. unit);
 - Medium RT Impulse Device for IED.

Specifications:

Model	SX-PD
Manufacturer	ATCP Physical Engineering
Maximum dimensions for circular specimens (D x T)	380 x 60 mm
Minimum dimensions for circular specimens (D x T)	80 x 5 mm
Maximum dimensions for rectangular specimens* (L x W x T)	380 x 380 x 60 mm
Minimum dimensions for rectangular specimens* (L x W x T)	60 x 60 x 5 mm
Maximum weight capacity	30 kg
Distance range between the sliding props	50 - 385 mm
Support dimensions (L x W x T)	562 x 562 x 160 mm
Support weight without a specimen	1.6 kg
Working temperature range	10 - 40°C (50 - 104 °F)

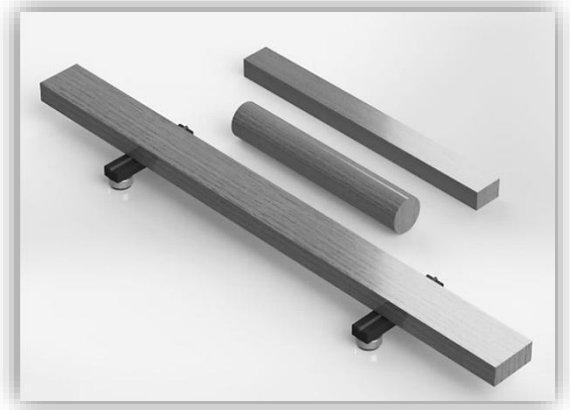
(*) The Sonelastic Systems and SX-PD Support may be used to characterize the resonance frequencies of non-circular plates, but not their elastic moduli because of the aspect ratio.

SA-AG

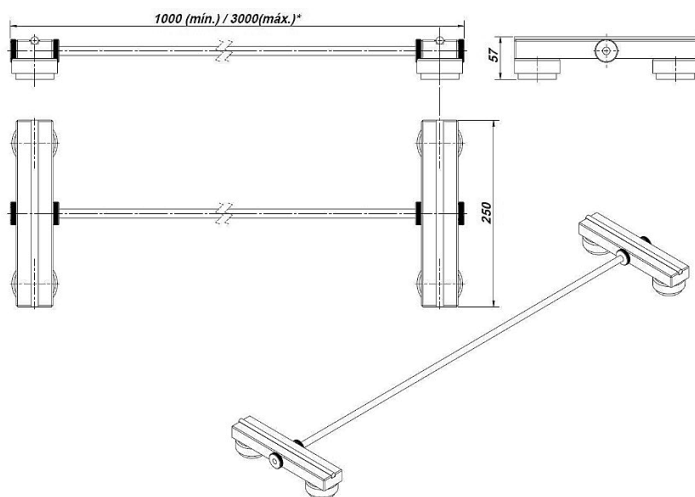
Adjustable support for large specimens

Features:

- Developed for the Impulse Excitation Technique (ASTM-E1876) and Sonelastic® Systems.
- Suitable for bars and cylinders up to 5.3 m long and 200 kg heavy.
- Optimum for tests applying flexural vibration mode.
- Allows tests on longitudinal and torsional vibration modes.
- Manufactured in stainless steel and Nylon.



Dimensions:



*With optional extension rod.

Typical configuration:

- Parts:

- SA-AG Support;
- CA-DP Acoustic Sensor;
- Sturdy Tripod.

- Accessories:

- Medium Manual Impulse Device;
- Extension rod.

- Optional item:

- Extension rod (maximum of 1 unit).

Specifications:

Model	SA-AG
Manufacturer	ATCP Physical Engineering
Maximum dimensions for rectangular specimens* (L x W x T) ..	5,300 x 200 x 200 mm
Minimum dimensions for rectangular specimens (L x W x T)	120 x 20 x 20 mm
Maximum dimensions for cylindrical specimens* (L x D)	5,300 x 200 mm
Minimum dimensions for cylindrical specimens (L x D)	120 x 30 mm
Maximum dimensions for the standard support (L x W x T).....	1,000 x 250 x 57 mm
Maximum dimensions for the extended support* (L x W x T).....	3,000 x 250 x 57 mm
Maximum weight	250 kg
Support weight	3.0 kg
Extended support weight without a specimen*	5.3 kg
Working temperature range	10 - 40°C (50 - 104 °F)

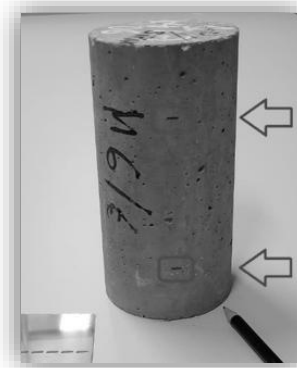
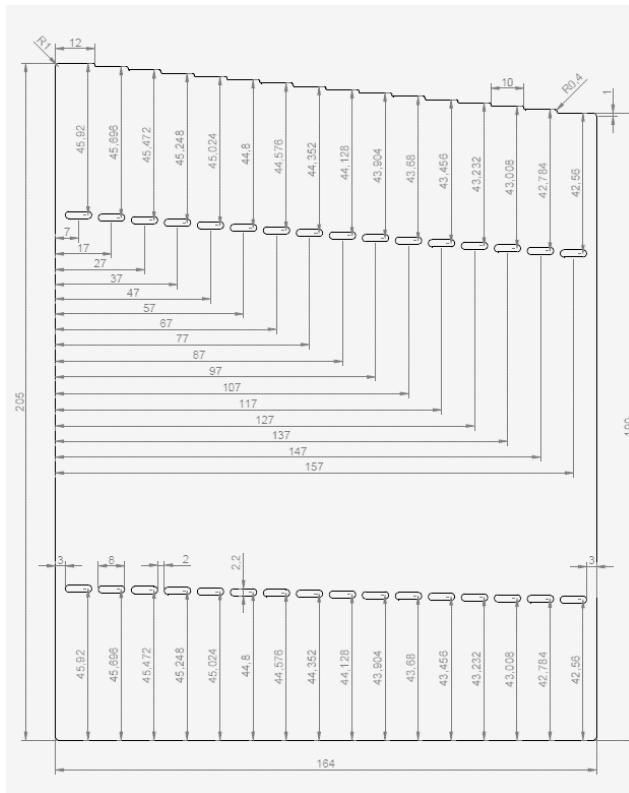
* For the support extended with one extension rod.

Ruler for marking nodal lines on concrete specimens

Characteristics:

- Developed for the Impulse Excitation Technique and Sonelastic® Systems.
- Suitable for cylindrical specimens with nominal dimensions of 100 mm (diameter) x 200 mm (height).
- For marking nodal lines without the need to use a caliper.

Dimensions:



Typical configuration:

- **Parts:**
 - Ruler made of stainless steel.
- **Accessories:**
 - 2 mm mechanical pencil;
 - 2 mm graphite mines.

Specifications:

Model	RGCP0224H
Manufacturer	ATCP Physical Engineering
Range for the specimen actual height.....	From 190 to 205 mm
Working temperature range	10 - 40°C (50 - 104 °F)

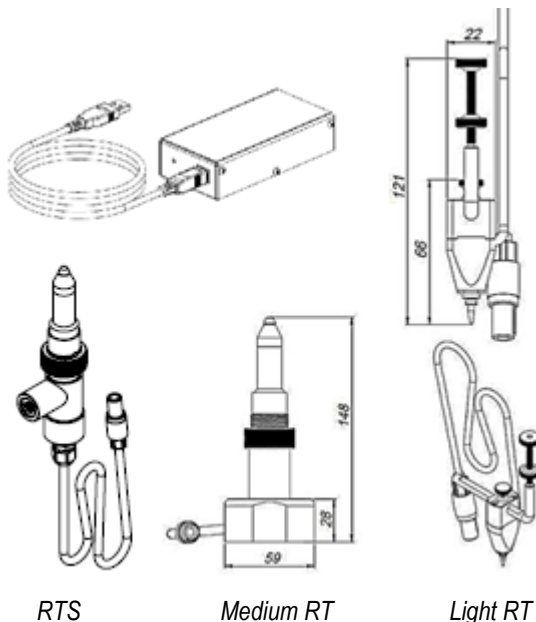
IED Automatic Impulse Device

Features:

- Developed for the Impulse Excitation Technique (ASTM-E1876) and Sonelastic® Systems.
- Allows automatic, adjustable and reproducible impulse excitation.
- Remote operation via USB by Sonelastic® Software.
- Impulse devices made of stainless steel, anodized aluminum and Nylon.
- Suitable for SA-BC, SB-AP, SX-PD, SP-B and SP-HZ supports.
- USB powered.



Dimensions:



Typical configuration:

- Parts:

- Control unit;
- RTS Impulse Device, or
- Medium RT Impulse Device, or
- Light RT Impulse Device.

- Accessories:

- USB cable.

- Optional items:

- RTS Impulse Device;
- Medium RT Impulse Device;
- Light RT Impulse Device.

Control unit specifications:

Model	IED-USBPW
Manufacturer	ATCP Physical Engineering
Adjustable voltage range for the excitation electrical pulse	1 - 11 V
Adjustable time range for the excitation electrical pulse	1 - 60 ms
Protection against electric shock.....	Class I
International Protection Rating (IP code)	IP30
USB port current consumption	Up to 500 mA
Output voltage (max).....	11 VDC
Output current (max)	1.25 A
Control unit dimensions (L x P x A)	125 x 60 x 36 mm
Weight	250 g
Working temperature range	10 - 40°C (50 - 104 °F)

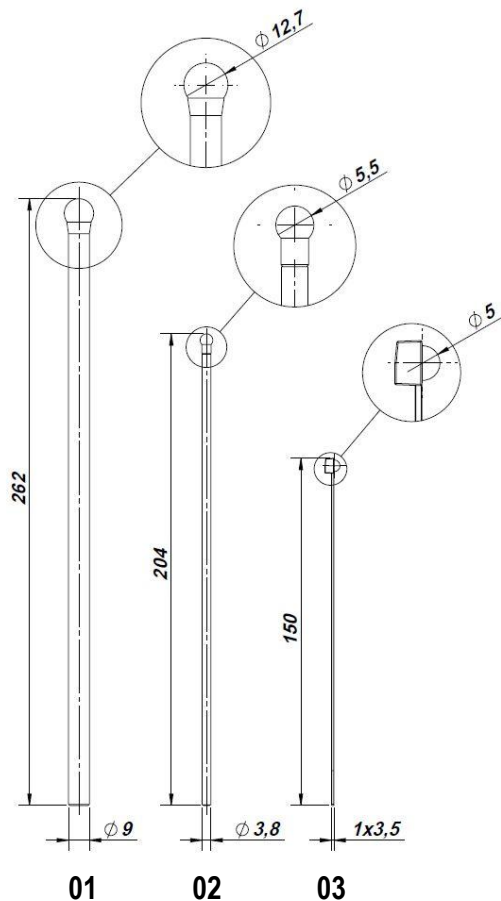
Medium, Light and Extra Light Manual Impulse Devices

Features:

- Developed for the Impulse Excitation Technique (ASTM-E1876) and Sonelastic® Systems.
- Impact tip made of stainless steel.
- Handle made of high damping polymer.
- Suitable for the manual configurations of SA-BC, SB-AP, SX-PD, SA-AG and SP-HZ supports.



Dimensions:



Technical specifications:

01 – Medium Manual Impulse Device:

Model: PMM
 Total length: 262 mm
 Ø of the body 9 mm
 Ø of the impact tip 12.7 mm
 Weight 25 g

02 – Light Manual Impulse Device:

Model: PML
 Total length: 204 mm
 Ø of the body 3.8 mm
 Ø of the impact tip 5.5 mm
 Weight 3 g

03 – Extra Light Manual Impulse Device:

Model: PMEL
 Total length: 150 mm
 Ø of the body 3.5 x 1.0 mm
 Ø of the impact tip 5.0 mm
 Weight 1 g

Manufacturer: ATCP Physical Engineering.

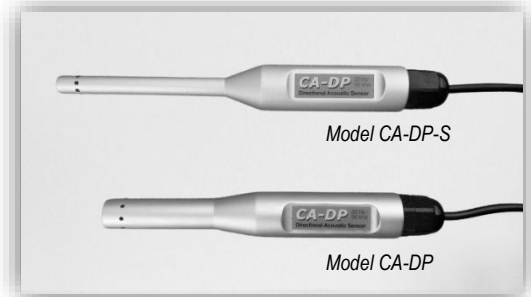
General specifications:

Manufacturer ATCP Physical Engineering
 Working temperature range 10 - 40°C (50 - 104 °F)

Acoustic Sensor CA-DP

Features:

- Developed for the Impulse Excitation Technique (ASTM-E1876) and Sonelastic® Systems.
- Directional, it is more sensitive to the specimen acoustic response than to background noise.
- Small diameter tip (CA-DP-S) for greater precision in positioning on small specimens.
- Frequency range of 20 Hz to 96 kHz.
- TRS P2 / 3.5 mm connector.
- Manufactured of anodized aluminum.
- 1,5 m shielded cable.



Typical configuration:

- Parts:

- Acoustic Sensor model CA-DP, or
- Acoustic Sensor model CA-DP-S (for small specimens).

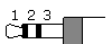
- Optional items:

- Vertical mounting base;
- Sturdy Tripod;
- Extension cable.

Specifications:

Models.....	CA-DP and CA-DP-S
Manufacturer	ATCP Physical Engineering
Transducer element	Custom electret
Frequency range	70 Hz - 96 kHz
Sensibility	-40 ±8 dB (0 dB = 1 V/Pa)
Directivity	-10 dB in 90° @ 1 kHz / 1 cm
Signal-noise ratio (S/N)	≥ 56 dBA
Supply voltage	2 - 10 VDC
Impedance	1 kΩ
Maximum dimensions: Ø x L (Model CA-DP)	20 x 140 mm
Maximum dimensions: Ø x L (Model CA-DP-S).....	20 x 160 mm
Tip diameter (Model CA-DP).....	12,7 mm
Tip diameter (Model CA-DP-S).....	8 mm
Weight	110 g
Working temperature range	10 - 40°C (50 - 104 °F)
Connector	TRS P2 / 3.5 mm

Wiring:

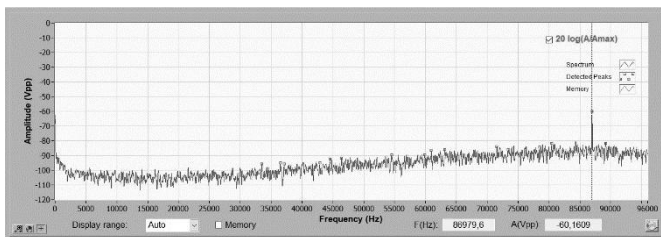
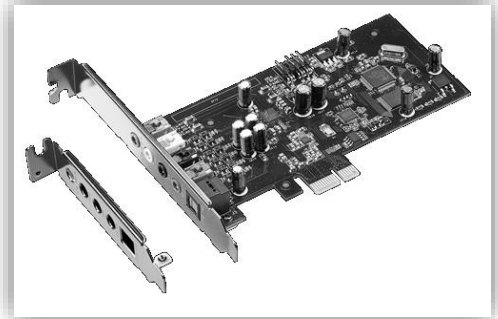


- 1: Signal;
- 2: Bias;
- 3: Ground.

Signal acquisition PCIe card XONAR

Features:

- Compatible with Sonelastic® Software.
- For digitizing signals from electret acoustic sensors in the frequency range of 20 Hz to 96 kHz.
- Compatible with desktop computers' PCIe interface.
- Input connector type TRS P2 / 3.5 mm.
- High signal to noise ratio (116 dB) and low distortion (0.0025%).



Sonelastic® Software displaying an 87 kHz signal detected by a CA-DP-S and digitized by the XONAR.



Calibratable with traceability to SI.

Typical configuration:

- Parts:

- Signal acquisition card XONAR.

- Optional items:

- CA-DP Acoustic Sensor;
- CA-DP-S Acoustic Sensor;
- Calibration certificate.

Specifications:

Model	Xonar SE
Manufacturer	ASUS
Interface	PCIe
Input connector	TRS P2 / 3.5 mm
Operating system	Compatible with Windows 11
Maximum sample rate	192 kHz
Resolution	24 bits
Signal to noise ratio (SNR)	116 dB
THD+N	0.0025%
Frequency range	20 Hz - 96 kHz
Dimensions	130 x 68 mm
Weight	60 g
Working temperature range	10 - 40°C (50 - 104 °F)

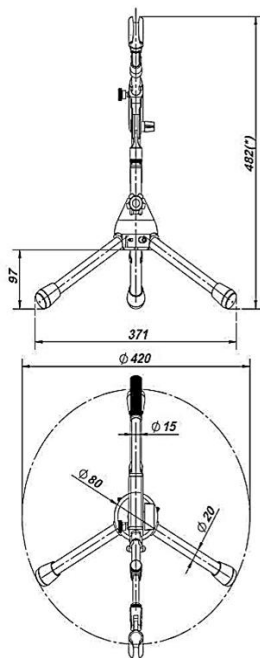
Sturdy Tripod

Features:

- Allows the CA-DP Acoustic Sensor and Medium RT Impulse Device positioning with 5 degrees of freedom.
- Isolates vibrations by combining massive elements with bumpers.
- Telescopic arm with adjustable length ranging from 42,5 to 72,4 cm
- Manufactured in carbon steel and injected aluminum with electrostatic painting.



Dimensions:



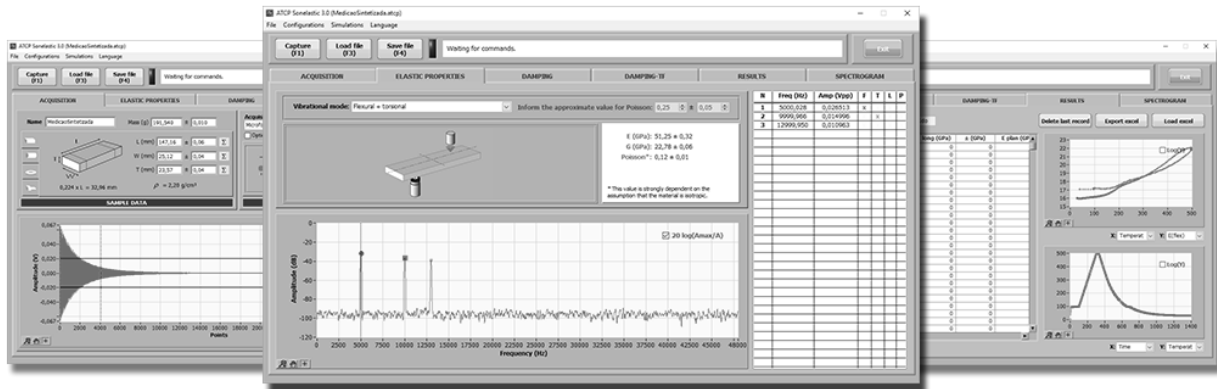
Typical configuration:

- **Parts:**
 - Sturdy Tripod.
- **Accessories:**
 - CA-DP Acoustic Sensor clip.
- **Optional items:**
 - CA-DP Acoustic Sensor.

Specifications:

Model	PRB
Manufacturer	ATCP Physical Engineering
Degrees of freedom	05
Reach of the telescope arm	42,5 - 72,5 cm
Weight	3 kg
Working temperature range	10 - 40°C (50 - 104 °F)

Sonelastic® Software



Features:

- Developed for the Impulse Excitation Technique and Sonelastic® Systems.
- In accordance with ASTM-E1876 and related standards.
- Allows elastic moduli and damping characterization of materials.
- Suitable for rectangular bars, cylinders, discs and rings.
- Supports flexural, torsional, longitudinal and planar modes of vibration.
- Estimates resonance frequencies based on specimen dimensions, weight, and estimated elastic modulus, facilitating the identification of correct frequencies.
- Automatically calculates the standard deviation for three measurements of each dimension taking into consideration the measurement instruments uncertainty.
- Computes the measurement uncertainty automatically.
- Exports results and curves to spreadsheet.
- Supports automatic characterizations in dependence of time and temperature.
- Generate test reports.
- Estimates the secant/chord modulus of concrete using the Popovics model.
- Allows pre-registration of mass and dimensions of up to 9,999 specimens.
- Compatible with Windows 11.
- Developed by ATCP Physical Engineering.

Computer DELL Inspiron Desktop



Features:

- Full compatible with Sonelastic® Software.
- Turn key computer delivered with Sonelastic® Software and XONAR acquisition card installed.
- Processor i3, 8GB RAM and 512GB SSD.
- Includes 21.5-in. display.
- Windows 11 Pro.
- Reliable and cost-effective.

Specifications:

Model	Inspiron Small Desktop or equivalent
Manufacturer	DELL
Operating system	Windows 11 Pro
Processor	Intel® Core™ i3
Graphic card	UHD Intel® Graphics
HD	512 GB SSD
Keyboard	Wired BR
Mouse	Wired Black
Wireless	802.11ac (WiFi 2x2) + Bluetooth 5.0
Dimensions	29 x 9.3 x 29.3 cm
Weight	3.5 kg
Working temperature range	10 - 40°C (50 - 104 °F)

Computer DELL Inspiron Laptop



Features:

- Full compatible with Sonelastic® Software.
- Turn key computer delivered with Sonelastic® Software installed.
- Processor i3 or AMD Ryzen 5, 8GB RAM and 256GB SSD.
- 15.6-inch full HD screen (1920x1080).
- Windows 11 Pro.
- Reliable and cost-effective.

Specifications:

Model	Inspiron 15 or equivalent
Manufacturer	DELL
Operating system	Windows 11 Pro
Processor	Intel® Core™ i3
RAM memory.....	8 GB
Graphic card	AMD Radeon™ Vega 8 or equivalent
HD	256 GB SSD
Wireless	802.11ac (WiFi 2x2) + Bluetooth 5.0
Dimensions	35.8 x 23.7 x 1.75 cm
Weight	1.7 kg
Working temperature range	10 - 40°C (50 - 104 °F)