



FLOXLAB



ROCK MECHANICS TESTERS

AVS

Acoustic Velocity System

Measurement of P, S_1 and S_2 acoustic velocities and determination of dynamic elastic constants on rock specimens



COMPLIANT WITH **ASTM D2845**

System overview

FLOXLAB | ROCK MECHANICS TESTERS

A turnkey ultrasonic measurement package for determining compressional and shear wave velocities in rock specimens — under ambient, uniaxial or triaxial stress.

KEY FEATURES

- ◆ **P, S₁ and S₂ wave velocity measurement**
Compressional and shear wave acquisition at 1 MHz.
- ◆ **Dynamic elastic constants computation**
Young's modulus, Poisson's ratio, shear, bulk and Lamé parameters.
- ◆ **Compatible with Floxlab acoustic cells**
Also accepts the end-user's own acoustic transducers.
- ◆ **Complete turnkey package**
Pulser/receiver, acoustic platens, switch box, cables, acquisition and analysis software.
- ◆ **ASTM D2845 compliant**
Standard methodology for ultrasonic velocity laboratory testing of rock.
- ◆ **Ambient or stress-loaded operation**
Operable under ambient, uniaxial and triaxial confining conditions.

STANDARD

ASTM D2845

Laboratory ultrasonic
velocity testing of rock

FREQUENCY

1 MHz

P, S1 and S2 transducers
integrated in acoustic platens

All components delivered ready-to-use — installation, training and commissioning available on request.

01

Pulser / Receiver

Ultrasonic transducer excitation and waveform signal display.

02

Acoustic platens

Two platens with integrated P, S₁ and S₂ transducers at 1 MHz.

03

Switch box

PC-controlled Tx / Rx channel switching for P, S₁, S₂ selection.

04

Cables & accessories

Complete wiring, acoustic coupling gel and toolbox.

05

Acquisition software

Automated control of gain / range / delay and curve saving.

06

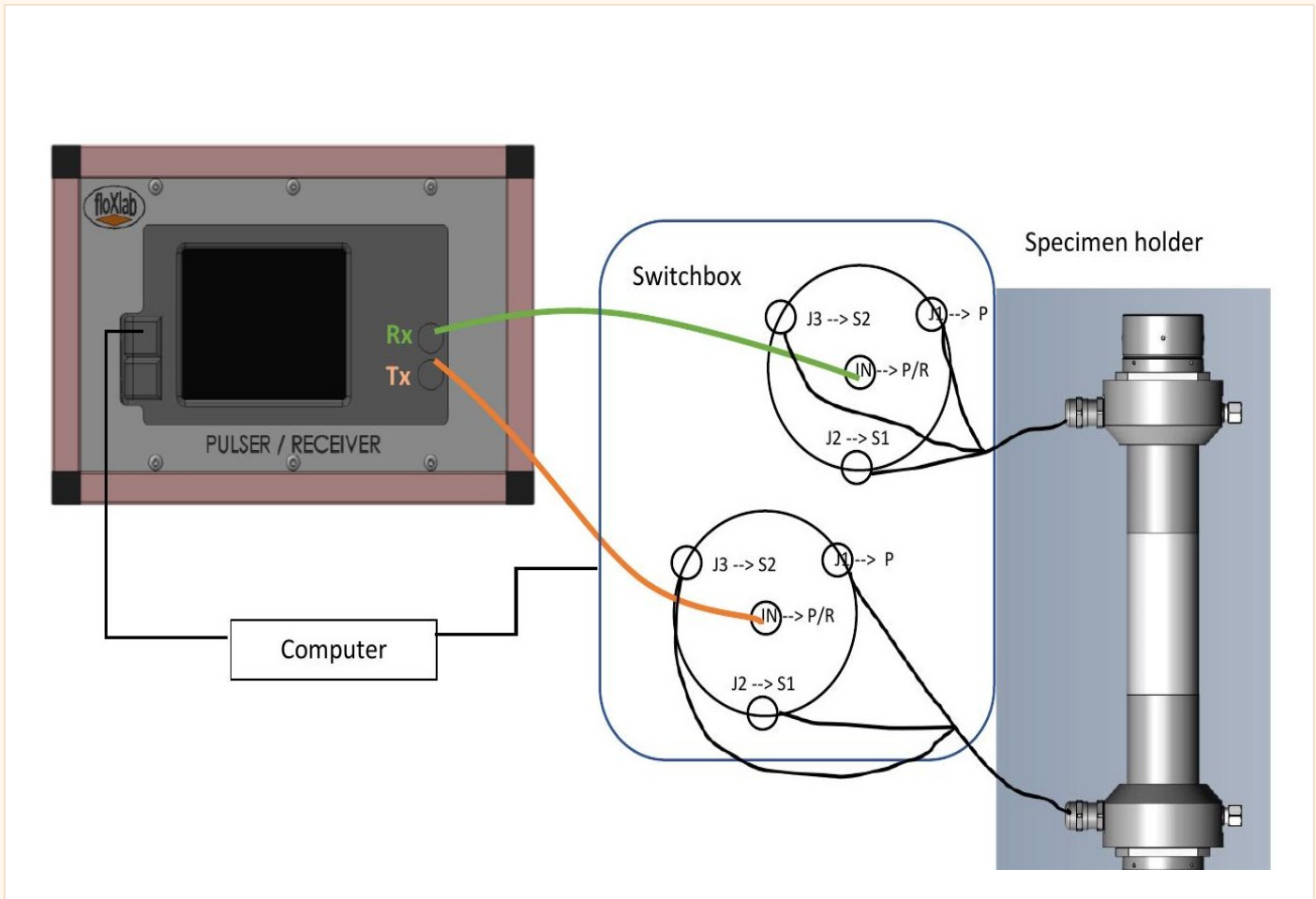
Analysis software

Determination of V_p , V_{S1} , V_{S2} and elastic constants computation.

System architecture

FLOXLAB | ROCK MECHANICS TESTERS

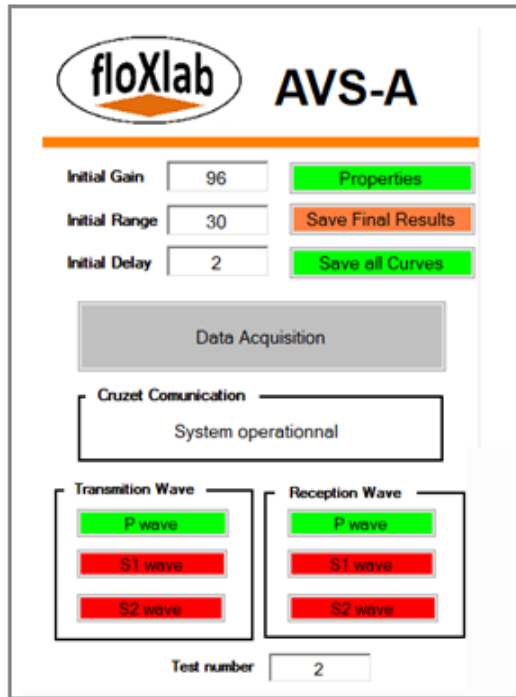
Wiring scheme : pulser/receiver ↔ switch box ↔ specimen holder



KEY POINTS

- **Tx (orange)** Emission channel to transmitter transducer
- **Rx (green)** Reception channel from receiver transducer
- **RJ45 control** Switch box driven via RJ45 — P / S₁ / S₂ selection by software
- **USB link** Pulsar/receiver connected to PC via USB

APPLILAB INTERFACE



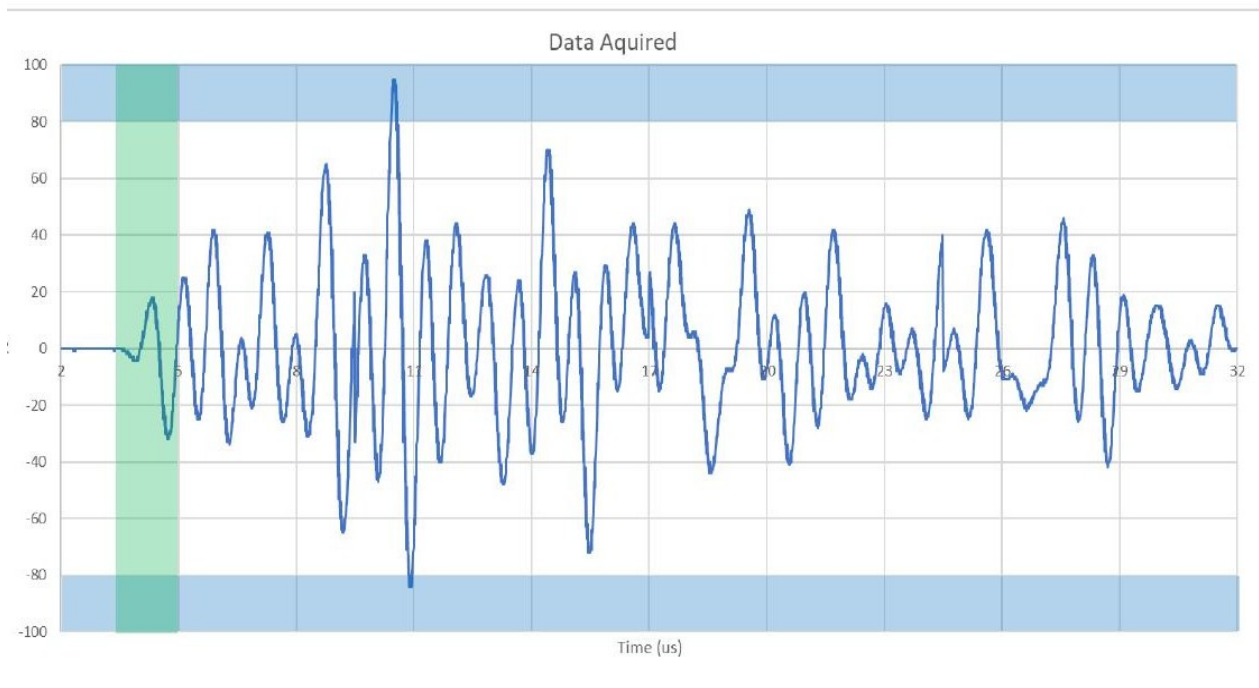
ACQUISITION PARAMETERS

- **Gain (dB)** — Signal amplitude in 80–100 % range
- **Range (μ s)** — Temporal acquisition window
- **Delay (μ s)** — Window start offset
- **Wave type** — P, S₁ or S₂ selection

SOFTWARE FUNCTIONS

- Manual or automated acquisition
- Curve and final result saving
- Switch-box communication
- Real-time signal visualisation

ACQUIRED SIGNAL EXAMPLE



Measurement & calibration

FLOXLAB | ROCK MECHANICS TESTERS

Acoustic velocity test on rock core specimen — step-by-step procedure

MEASUREMENT PROCEDURE

1 Specimen preparation

Machining as per ASTM D4543 — flat parallel surfaces, saturation control.

2 Coupling gel

Apply acoustic coupling gel to both faces of the specimen.

3 Positioning

Centre the specimen between the platens.

4 Holding

Heat-shrink tubing or Hoek cell to hold the assembly.

5 Acquisition

Launch software, select wave type (P, S₁, S₂), tune gain / range / delay.

6 Analysis

Time-of-flight selection, automatic computation of velocities and elastic constants.

CALIBRATION PROCEDURE

A TOF measurement (no specimen)

Press platens together with coupling gel; measure TOF of P, S₁, S₂ waves.

B Enter the time shift

Report values into result sheet — correction is subtracted automatically.

C Product validation

Compare data on a copper reference plug with factory calibration data.

D Gel renewal

Renew acoustic coupling gel between transducer and bottom platen monthly.

Data interpretation & specs

FLOXLAB | ROCK MECHANICS TESTERS

Automatic computation of dynamic elastic constants from V_p , V_s and bulk density (isotropic specimens).

DYNAMIC ELASTIC CONSTANTS

E

Young's modulus

Unit : Pa

ν

Poisson's ratio

Unit : —

μ

Shear modulus

Unit : Pa

K

Bulk modulus

Unit : Pa

λ

Lamé's constant

Unit : Pa

k

Compressibility

Unit : Pa⁻¹

ACOUSTIC VELOCITY RESULT SHEET



TECHNICAL SPECIFICATIONS

Standard	ASTM D2845
Resonance frequency	1 MHz
Measurement modes	Compressional (P) and shear (S_1 , S_2) waves
Pulser / Receiver	340 × 235 × 360 mm
Power supply	100–240 VAC, 50–60 Hz
Ingress protection	IP53
Operating temperature	5 °C to 40 °C (ambient)

Get in touch with our team



ADDRESS

Floxab
23 rue du Port — Parc de l'Île
92000 Nanterre — France



EMAIL

contact@floxlab.com

Sales · Support · Custom requests



PHONE

+33 (0)1 81 93 12 85

Mon – Fri • 9 am – 6 pm CET



SCAN ME

Visit our website

www.floxlab.com

Thank you for your interest in Floxlab solutions.