We present a new version of the low-frequency apparatus which measures the complex Young’s moduli and attenuation of the rock samples at frequencies from 0 Hz to 20 kHz. The mechanical assembly of the apparatus comprises two metal platforms placed on the top and in the bottom of the apparatus, and a set of units between the platforms which is configured as a column and includes a hydraulic pressure machine, a tri-axial core holder, a multilayer piezoelectric actuator, aluminium calibration standard, and two aluminium plugs having passages for a fluid injection.

The apparatus utilizes a stress-strain technique and measures the complex Young’s modulus and Poisson’s ratio of the rock sample at the range of strain amplitudes between 10-7 and 10-9 at confining or uniaxial pressures from 0 to 70 MPa.

The extensional attenuation is estimated as the phase shift of the signals obtained from the axial strain gauges coupled with the aluminium standard and rock sample correspondingly and measured with an accuracy of 1%. The preliminary results obtained for a sandstone sample at the frequency range from 0.01 Hz to 1 kHz. The experiments were carried out at room temperature and confining pressures from 3 to 40 MPa.