

ANNEX II + III: TECHNICAL SPECIFICATIONS + TECHNICAL OFFER

Contract title: Supply of Equipment Necessary for Improving of Conformity Assessment (CA) Services in the Republic of Serbia

1 /22

LOT 3: EQUIPMENT FOR DETERMINATION OF MECHANICAL RESISTANCE OF CONSTRUCTION MATERIALS/PRODUCTS

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Columns 1-2 should be completed by the Contracting Authority

Columns 3-4 should be completed by the tenderer

Column 5 is reserved for the evaluation committee

Annex III - the Contractor's technical offer

The tenderers are requested to complete the template on the next pages:

- Column 2 is completed by the Contracting Authority shows the required specifications (not to be modified by the tenderer);
- Column 3 is to be filled in by the tenderer and must detail what is offered (for example the words “compliant” or “yes” are not sufficient);
- Column 4 allows the tenderer to make comments on its proposed supply and to make eventual references to the documentation.

The eventual documentation supplied should clearly indicate (highlight, mark) the models offered and the options included, if any, so that the evaluators can see the exact configuration. Offers that do not permit to identify precisely the models and the specifications may be rejected by the evaluation committee.

The offer must be clear enough to allow the evaluators to make an easy comparison between the requested specifications and the offered specifications.

Unless otherwise specified, the requirements in these Technical Specifications are presented as a minimum standard which the offered goods must meet.

Unless otherwise stated, the following requirements shall also apply:

A - Documentation

Upon delivery of the goods a technical documentation for equipment (such as instruction manual for the use, maintenance, calibration, etc.), in English shall be provided, unless otherwise stipulated by Serbian technical regulations. If available, an additional manual in the Serbian language would be welcomed.

B – Compliance to safety rules and regulations

When submitting a tender, the tenderer must state expressly that all of the proposed equipment meet the safety requirements of the applicable rules and regulations in force in the Republic of Serbia. Upon delivery, the tendered equipment shall include proof of compliance.

C - Certificate of calibration

The Contractor shall deliver the equipment with the certificates of calibration for the equipment contributing to the uncertainty of the final test result for which they are intended to be used. The certificates of calibration should be issued by an accredited calibration laboratory, unless otherwise specified.

D – Installation

The Contractor shall install the equipment in the premises of the user and demonstrate after the installation of the equipment that it is capable of performing the functions required of it.

E - Training

When applicable, the Contractor shall provide on-the-job training to ensure the correct operation and maintenance of the equipment, at the time of installation, with additional training, to be provided by the Contractor within the following 6-month period. Tenderer shall submit training programme. The length of the training shall be adequate to the technical characteristics and maintenance requirements of the equipment supplied and shall allow the final user to properly handle the instrument(s). The training material must be provided on minimum 1 (one) electronic media and in minimum 1 (one) hard copy per trainee. The training should be in Serbian language (or interpretation must be provided by the supplier). The performance of the equipment against the required technical specifications shall be verified as part of the training.

F – Warranty

The Contractor shall provide a warranty for the equipment supplied in line with the Special Conditions. This warranty shall remain valid for one year after provisional acceptance.

G - Commercial Warranty

Commercial warranty must remain valid for two years (after the end of one year standard warranty) in accordance with the conditions laid down in Article 32 of the Special and General Conditions. Tenderer must provide a detailed description of the organisation of the proposed service.

LOT 3: EQUIPMENT FOR DETERMINATION OF MECHANICAL RESISTANCE OF CONSTRUCTION MATERIALS/PRODUCTS

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
1	<p>TEST EQUIPMENT FOR COMPRESSION STRENGTH, FLEXURE STRENGTH, ELASTIC MODULUS, AND SPLITTING TENSILE STRENGTH OF CONCRETE</p> <p>QUANTITY: 1</p>			
	Manufacturers name:			
	Product model:			
	<p>The equipment is able to perform tests according to the following standards:</p> <p>EN 12390-4:2000 Testing hardened concrete - Part 4: Compressive strength - Specification for testing machines</p> <p>EN 12390-3:2009 Testing hardened concrete - Part 3: Compressive strength of test specimens</p> <p>EN 772-1:2011: Methods of test for masonry units - Part 1: Determination of compressive strength</p> <p>EN 12390-5:2009 Testing hardened concrete - Part 5: Flexural strength of test specimens</p> <p>EN 12390-6:2009 Testing hardened concrete - Part 6: Tensile splitting strength of test specimens</p> <p>EN 12390-13:2013 Testing hardened concrete - Part 13: Determination of secant modulus of elasticity in compression</p>			

<p>EN 1338:2003 + AC:2006 - Concrete paving blocks - Requirements and test methods EN 1339:2003 + AC:2006 - Concrete paving flags - Requirements and test methods EN 1340:2003 + AC:2006 - Concrete kerb units - Requirements and test methods</p> <p>Intended use: Determination of compressive strength, flexural strength and tensile splitting strength of concrete, prefabricated concrete, brick products</p> <p>The units of the set of test equipment shall be compatible. Test frames for the various tests as indicated are controlled from a common single control unit.</p> <p>CONTROL UNIT The control unit must be capable of connecting to a minimum of 3 different frames with a minimum of 3000 kN load capacity, with software A PC with monitor, keyboard, laser printer, operating system and software to run and control instrument parameters, to be included.</p> <p>Complete test cycle automatically performed via display and via software with PC control.</p> <p>Interactive software: remote control of the system, monitoring and display of test data and parameters in graphical or numerical format. To be capable of real time variation of the setting including the control method (load or strength, displacement, strain).</p> <p>Hydraulic system should provide a working pressure of up to a minimum of 350 bar, minimum 3 hydraulic ports for connection to test frames,</p>			
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	<p>servo-controlled proportional valves, oil cooling system with forced ventilation, and ON/OFF valves with electronic control.</p> <p>The hydraulic system must have appropriate hardware and on-board firmware.</p> <p>Servo-hydraulic system for static and low frequency dynamic tests on building materials under control of Load/Stress, Displacement Strain. Capable both for traditional tests, such as compression and flexure on concrete, cement, mortar, blocks and cyclic tests for the determination of secant elastic modulus (E) according to relevant standards.</p> <p>Hydraulic pump with oil-flow control</p> <p>COMPRESSION FRAME</p> <p>Capacity: at least 3000 kN</p> <p>Accuracy: class 1 (EN)</p> <p>Hydraulic pump with oil-flow control</p> <p>Platens: Minimum 300 mm x 500 mm</p> <p>Platens surface hardness 55 HRC, flatness tolerance 0.03 mm</p> <p>Ram travel: at least 50 mm</p> <p>Minimum vertical daylight: 340 mm</p> <p>Minimum horizontal daylight: 360 mm</p>			
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<p>The tester must be suitable for testing of cubes minimum 200 mm, cylinders minimum diameter 150 mm height 300 mm and blocks.</p> <p>FLEXURAL FRAME</p> <ul style="list-style-type: none"> - Universal flexural frame (provides testing of concrete beams, kerbs, flagstones, pipes) - adjustable vertical clearance - capacity minimum 150 kN - load sensor (pressure transducer or load cell) accuracy: class 1 (EN) - horizontal clearance minimum 660 mm, vertical clearance minimum 600 mm, distance between upper rollers (adjustable) 100, 150, 200 mm or single roller, distance between lower rollers (adjustable) 100 -900 mm, piston travel 110 mm. <p>The flexural frame should be supplied with two loading supports and central loading roller and top loading swivel pad kerbs and flagstones testing</p> <p>EXTENSOMETER</p> <p>Extensometer for gauging compressive strain for elastic modulus determination, capable of axial deformation measurement of modulus of elasticity and uniaxial secant elastic modulus</p> <p>Three extensometer units required for axial deformation measurement.</p> <p>Inductive transducer: Sensitivity 0.02 μm, feed up to 10 V, travel ± 1.5 mm.</p> <p>Gauge length: adjustable from 50 mm to 160 mm</p> <p>Minimal axial dimension: 150 mm</p> <p>SPLITTING TENSILE DEVICE</p>			
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	<p>Splitting tensile test device compatible with compression frame and above standards</p> <p>ACCESSORIES The above frames should be equipped with distance pieces to adjust the vertical daylight for cylinders, cubes, and blocks, flexural test devices for mortar beams, roller bearing assembly for flexural frame, accessory for testing flagstones and kerbs</p> <p>Power supply: 220-230 V / 50 Hz</p> <p>The following additional requirements apply:</p>			
	A - Documentation			
	B – Compliance to safety rules and regulations			
	C - Certificate of calibration			
	D - Installation			
	E – Training: Number of persons to be trained: 2			
	Duration: minimum 1 (one) working day			
	F - Warranty			
	G - Commercial Warranty			
2	<p>BÖHME ABRADER FOR DETERMINATION OF WEAR RESISTANCE</p> <p>Manufacturers name:</p> <p>Product model:</p> <p>The equipment is able to perform tests according to the following standard: EN 13892-3:2014</p> <p>Intended use: Using this equipment, the following wear resistance tests are performed: natural stone</p>			

	<p>according to EN 14157:2004, concrete paving blocks according to EN 1338:2003, concrete paving flags according to EN 1339:2003, concrete kerb units according to EN 1340:2003, and screed materials according to EN 13892-3:2014.</p> <p>Horizontal rotating table with a test track. Table diameter 750 mm. When loaded the rotating table shall rotate at (30 ± 1) rpm, driven by electromotor.</p> <p>Revolution counter for the rotating table and a device that switches off the rotating table automatically after 22 revolutions.</p> <p>The test track shall be annular with an inside radius of approximately 120 mm and an outside radius of approximately 320 mm. Width of the test track (200 ± 0.5) mm. Track made of cast iron. Track Brinell hardness of 190 HB to 220 HB 2.5/187.5.</p> <p>Specimen holder comprises a U frame approximately 40 mm thick, with a clear distance of (5 ± 1) mm.</p> <p>Loading device capable of creating a test force of (294 ± 3) N.</p> <p>Power supply: 220-230 V - 50 Hz / 380-400 V - 50 Hz, 1 or 3 phase.</p> <p>Accessory: 25 kg of abrasive artificial corundum sand 80 grade conforming to EN 13892-3:2014. Conformity shall be document with a certificate.</p> <p>The following additional requirements apply:</p>			
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	A - Documentation			
	B – Compliance to safety rules and regulations			
	C - Certificate of calibration			
	D - Installation			
	E – Training: Number of persons to be trained: 2			
	Duration: minimum 1/2 (half) working day			
	F - Warranty			
	G - Commercial Warranty			
3	ULTRASONIC PULSE VELOCITY TESTER FOR CONCRETE QUANTITY: 1			
	Manufacturers name:			
	Product model:			
	<p>The equipment is able to perform tests according to the following standard: EN 12504-4:2004</p> <p>Intended use: Testing concrete, determination of ultrasonic pulse velocity. Portable device for outdoor on-site testing. For determination of the velocity of propagation of pulses of ultrasonic longitudinal waves in hardened concrete.</p> <p>Microprocessor controlled with digital display in SI units (Système International d'Unités). Software user interface in English.</p> <p>Transmitter output, ultrasonic pulse amplitude: Selectable by the user, up to 1000 V at the least.</p> <p>Transit time measurement range: 0.1 - 1900 µs, with a resolution of 0.1 µs. Accuracy when measuring on a calibration bar: 2 %.</p>			

	<p>Portable pulse velocity tester for outdoor use in on-site field testing.</p> <p>USB, Bluetooth, RS 232 or equivalent interface for transfer of data to PC.</p> <p>Accessories: 1 set of transmitting and receiving transducers approximately 24 kHz, 1 couple of transmitting/receiving transducers approximately 54 kHz, 1 couple of transmitting/receiving transducers approximately 150 kHz. Connecting cables for all transducers.</p> <p>Carrying case.</p> <p>Power supply: rechargeable batteries, battery charger and AC adapter. Power supply for AC adapter: 220-230 V - 50 Hz</p> <p>Accessory: Coupling paste 250 ml.</p> <p>Accessory: Calibration bar with a certified pulse transit time.</p> <p>The following additional requirements apply:</p>			
	A - Documentation			
	B – Compliance to safety rules and regulations			
	C - Certificate of calibration			
	E – Training:	Number of persons to be trained:2		
		Duration: minimum 1 (one) working day		
	F - Warranty			
	G - Commercial Warranty			

4	WATER IMPERMEABILITY APPARATUS FOR CONCRETE			
	QUANTITY: 1			
	Manufacturers name:			
	Product model:			
	<p>The equipment is able to perform tests according to the following standard: EN 12390-8:2009</p> <p>Intended used: Testing hardened concrete - depth of penetration of water under pressure. Water is applied under pressure to a surface of a hardened concrete specimen. After testing the specimen is taken out of the apparatus and split and the depth of penetration of the waterfront is measured.</p> <p>The apparatus shall allow the not clamped surfaces of the test specimens to be observed during testing.</p> <p>The dimensions of a test area shall be half of the length of the edge or diameter of the concrete specimen test surface.</p> <p>Water pressure during testing: 500 kPa ± 50 kPa.</p> <p>Apparatus must be capable of holding water pressure for 72 hours.</p> <p>Must allow continuous monitoring of the quantity of water that enters the test specimen, e.g. by means of transparent water containers for the pressurized water provided with measuring divisions.</p>			

	<p>Compressor dedicated to the apparatus must be included.</p> <p>Pressure adjustment valve to regulate the water pressure.</p> <p>Valves to control filling water to and emptying water from each transparent container and each test station volume.</p> <p>Manometer - the apparatus must be capable of continuously indicating the applied pressure.</p> <p>Non-corroding or corrosion protected materials required for parts in contact with water.</p> <p>Number of test stations: 6. Two 3-station testing rigs - possibly sharing a same compressor - will also be considered to meet these specifications.</p> <p>Accessories: Set of 3 gaskets for specimens with a 200 mm by 200 mm footprint (100 mm gasket internal diameter), and a set of 3 gaskets for specimens with a 150 mm by 150 mm footprint (75 mm gasket internal diameter). Gaskets must be made of synthetic rubber or other material with equivalent characteristics.</p> <p>The following additional requirements apply:</p>			
	A - Documentation			
	B – Compliance to safety rules and regulations			
	C - Certificate of calibration			
	D - Installation			
	F - Warranty			
	G - Commercial Warranty			

5	<p>CONTROL UNIT FOR AUTOMATIC TESTING OF MECHANICAL PROPERTIES OF CONCRETE</p> <p>QUANTITY: 1</p>			
	Manufacturers name:			
	Product model:			
	<p>The equipment is able to perform tests according to the following standards: EN 12390-3:2010/AC: 2014, Clauses 4, 5.1 and 6.2, EN 772-1: 2012 Clause 6, EN 1338: 2012 Annex F, EN 1339: 2008 AC 2014, EN 1340: 2012 Annex F, EN 1916: 2007 /AC 2011 Annexes C and D, EN 12504-1: 2010 Clause 4, EN 14845-1: 2010 Clause 6.1, and EN 14845-2:2010.</p> <p>Intended use: Control unit for automatic testing compressive, flexural and tensile strengths of concrete material according the above-mentioned standards.</p> <p>The control unit shall also meet the minimum following requirements: - Be able to control, via software for conducting the tests according to the above mentioned standards, 3 different test frames of 150 kN, 300 kN and 4 000 kN capacity respectively, mentioned hereafter - Be adapted to two existing test frames from Controls company: one compression frame of 4000 kN model 50-C6652, serial number N°</p>			

	<p>12013161, year of production: 2012, weight: 1950kg, electric power 760W, voltage 230W, and one flexure frame of 150 kN model 50-C1401/FR</p> <ul style="list-style-type: none"> - Be supplied with a PC, screen, printer, cabinet, remote control and interactive software for the monitoring and display of test data and parameters either in graphic or numerical format, real time variation of the setting including the control method (load or strength, displacement, strain) - Be supplied with an hydraulic group able to provide up to 350 bar, with minimum 3 hydraulic ports for connection to the test frames, equipped of servo-controlled proportional valves, oil cooling system with forced ventilation, and ON/OFF valves with electronic control. The hydraulic system must have appropriate hardware and on board firmware. The hydraulic pump of the group shall be equipped with a precise oil-flow control system - Be supplied with: <ul style="list-style-type: none"> o Platens of at least 300 x 300 mm o Ram travel of at least 50 mm o Vertical daylight of approximately 350 mm o Horizontal daylight of approximately 370 mm - Be supplied with: <ul style="list-style-type: none"> o One (1) universal flexural frame for the test of concrete beams, kerbs, flagstones, pipes, with adjustable vertical clearance: max capacity of 300 kN, load sensor (pressure transducer or load cell), horizontal clearance 660 mm, vertical clearance 600 mm, distance between upper rollers adjustable at 100, 150 and 200 mm or single roller, distance between lower rollers adjustable from 100 mm to 1200 mm, piston travel 110 mm. The 			
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	<p>flexural frame should be able to test samples plates of 700 x 700 x 70 mm. The flexural frame should be supplied with two loading supports and central loading roller and top loading swivel pad kerbs and flagstones testing</p> <ul style="list-style-type: none"> ○ Four (4) Compressometer-Extensometer for elastic modulus determination allowing axial deformation measurement of modulus of elasticity and uniaxial secant elastic modulus ○ Splitting tensile test device compatible with compression frame from Controls (4000 kN model 50-C6652). <p>The equipment shall be able to test:</p> <ul style="list-style-type: none"> - Cubes of 200 mm x 200 mm - Cylinders of 150 mm diameter and 300 mm height - Block of 160 mm x 320 mm. <p>Power supply: 220-230 V - 50 Hz.</p> <p>The following additional requirements apply:</p>			
	A - Documentation			
	B – Compliance to safety rules and regulations			
	C - Certificate of calibration			
	D - Installation			
	E – Training:	Number of persons to be trained: 2		
		Duration: minimum 1 (one) working day		
	F - Warranty			
	G - Commercial Warranty			
6	<p>GRINDER FOR CONCRETE SAMPLES</p> <p>QUANTITY: 1</p>			

	Manufacturers name:			
	Product model:			
	<p>The equipment is able to perform tests according to the following standards: EN 12390-1:2012 and EN 12390-2:2009.</p> <p>Intended use: mechanical testing of concrete. This equipment is used for grinding end surfaces of prismatic, cubical and cylindrical concrete samples in order to determine the mechanical properties of concrete with sufficient accuracy. Size and shape of the samples are according to EN 12390-1:2012. The tolerance on the flatness of the potential load bearing surfaces in subsequent compression testing is 0.0006-d, where d is cube side length or cylinder diameter.</p> <p>Rotating grinding head with minimum 2 kW power. Rotation speed 1000-1500 rpm.</p> <p>Grinding head abrasion sectors impregnated with diamond</p> <p>Radial displacement of the grinding head: motor operated and automatically actuated. Right-left swing or equivalent.</p> <p>Base table must be sufficiently large to simultaneously grind up to three 100 mm cubes, or three 150 mm cubes, or two 200 mm cubes.</p> <p>The vertical clearance and travel of the grinding head must allow for grinding of cubes up to 200 mm side length and cylinders up to 150 mm in diameter and 300 mm in height.</p>			

	<p>Means to remove and collect grinding dust (e.g. an aspirator).</p> <p>Accessory: Fixtures for clamping to the base table cylinders Ø 150 mm and cubes side lengths 100 mm, 150 mm and 200 mm. Must allow for clamping up to three 100 mm cubes, or three 150 mm cubes, or two 200 mm cubes.</p> <p>Accessory: An extra full set of diamond impregnated grinding sectors.</p> <p>Power supply: 220-230 V - 50 Hz or 380-400 V, 50 Hz, 3 ph.</p> <p>The following additional requirements apply:</p>			
	A - Documentation			
	B – Compliance to safety rules and regulations			
	D - Installation			
	E – Training: Number of persons to be trained: 2			
	Duration: minimum 1 (one) working day			
	F - Warranty			
	G - Commercial Warranty			
7	<p>CONCRETE TEST HAMMER (REBOUND NUMBER)</p> <p>QUANTITY: 1</p>			
	Manufacturers name:			
	Product model:			
	The equipment is able to perform tests according to the following standard: EN 12504-2:2012			

	<p>Intended use: Non-destructive testing of concrete strength. Test procedure conforming to EN 12504-2:2012.</p> <p>Measurement range must at least include the interval from 10 MPa to 70 MPa.</p> <p>Impact energy: 2.207 N·m ± 10%.</p> <p>Hand-held instrument comprising a spring-loaded hammer mass which, when released, strikes a plunger impacting a concrete surface to be tested.</p> <p>Portable rebound hammer for outdoor use in on-site field testing.</p> <p>An electronic transducer measures the rebound distance of the mass.</p> <p>Automatic conversion of rebound distance to equivalent compression strength expressed in a digital display in MPa or other SI unit (Système International d'Unités). Display resolution 1 MPa or less.</p> <p>Microprocessor control, with software to convert the rebound of the hammer mass into equivalent compression strength. Calculation and digital display of average compression strength for a series of measurements. Display resolution for averages 0.2 MPa or less. Software user interface in English.</p> <p>Operating temperature range 0 °C - 50 °C.</p> <p>Results stored in memory.</p>			
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	<p>USB, Bluetooth, RS232, or equivalent interface for transfer of data to PC.</p> <p>Carrying case.</p> <p>Rechargeable battery or batteries.</p> <p>AC adapter for charging the battery or batteries.</p> <p>Weight of hand-held instrument: Maximum 1.6 kg.</p> <p>Power supply: 220-230 V - 50 Hz</p> <p>Accessory: One Steel Reference Anvil conforming to EN 12504-2:2012. Impact area hardness 52 HRC, Anvil mass (16 ± 1) kg. The anvil shall have a collar to support the rebound hammer in a perpendicular position relative to the anvil impact area during verification.</p> <p>Accessory: One medium-grain texture silicon carbide stone or equivalent material. For preparation of an area of concrete surface to be tested. To be used for grinding by hand heavily textured or soft surfaces until they are smooth.</p> <p>The following additional requirements apply:</p>			
	A - Documentation			
	B – Compliance to safety rules and regulations			
	C - Certificate of calibration			
	F - Warranty			
	G - Commercial Warranty			
8	ULTRASONIC PULSE VELOCITY TESTER FOR CONCRETE			

	QUANTITY: 1			
	Manufacturers name:			
	Product model:			
	<p>The equipment is able to perform tests according to the following standard: EN 12504-4:2004</p> <p>Intended use: Testing concrete, determination of ultrasonic pulse velocity. Portable device for outdoor on-site testing. For determination of the velocity of propagation of pulses of ultrasonic longitudinal waves in hardened concrete.</p> <p>Microprocessor controlled with digital display in SI units (Système International d'Unités). Software user interface in English.</p> <p>Transmitter output, ultrasonic pulse amplitude: Selectable by the user, up to 1000 V at the least.</p> <p>Transit time measurement range: 0.1 - 1900 μs, with a resolution of 0.1 μs. Accuracy when measuring on a calibration bar: 2 %.</p> <p>Portable pulse velocity tester for outdoor use in on-site field testing.</p> <p>USB, Bluetooth, RS 232 or equivalent interface for transfer of data to PC.</p> <p>Accessories: 1 set of transmitting and receiving transducers approximately 24 kHz, 1 couple of transmitting and receiving transducers approximately 54 kHz, 1 couple of transmitting</p>			

	<p>and receiving transducers approximately 150 kHz. Connecting cables for all transducers.</p> <p>Carrying case.</p> <p>Power supply: rechargeable batteries, battery charger and AC adapter. Power supply for AC adapter: 220-230 V - 50 Hz</p> <p>Accessory: Coupling paste 250 ml.</p> <p>Accessory: Calibration bar with a certified pulse transit time.</p> <p>The following additional requirements apply:</p>			
	A - Documentation			
	B – Compliance to safety rules and regulations			
	C - Certificate of calibration			
	E – Training: Number of persons to be trained: 2			
	Duration: minimum 1 (one) working day			
	F - Warranty			
	G - Commercial Warranty			
9	<p>DATA LOGGER FOR VIBRATING WIRE SENSORS</p> <p>QUANTITY: 1</p>			
	Manufacturers name:			
	Product model:			
	<p>The equipment is able to perform tests according to the following standards: ASTM D4435-84:1998 Clauses 1 to 10, ASTM D4436-84:1998 Clauses 1 to 11,</p>			

	<p>EN 5080-1:1993 Clauses 7, 8 and 9, DIN 21521-2:1993 Clauses 6 and 7, EN 124:2011 Clause 8, EN 1537:2011 Clause 9, EN ISO 9969: 2009 Clause 8, SRPS U.M1.046:1984 Clauses 1 to 5, SRPS U.M1.047:1987 Clauses 1 to 6.</p> <p>Intended use: Data logger for vibrating wire sensors used for proof load testing of bridges in-situ, structures in-situ, load testing of rock and ground anchors, measurement of cable tension force, long term monitoring of bridges, structures, landslides, pipelines, excavation, settlement and other applications according to the above mentioned standards.</p> <p>The equipment shall also meet the following minimum requirements: - 16 channels - Measurement accuracy $\pm 0.05\%$ F.S. - Configuration and data collection by a PC software supplied with the equipment. Power supply: 220-230 V – 50 Hz.</p> <p>The following additional requirements apply:</p>			
A - Documentation				
B – Compliance to safety rules and regulations				
C - Certificate of calibration				
D - Installation				
F - Warranty				
G - Commercial Warranty				