

Technical Specification of Ultrasonic Tomograph for Concrete Inspection

Supply installation and commissioning of low frequency ultrasonic tomograph for non-destructive inspection of concrete, reinforced concrete and stone masonry as per detailed specifications given below:

Low-Frequency Ultrasonic Tomograph represents a hand-held lightweight low-frequency ultrasonic device of general purpose. This can be used on rough surfaces, without applying contact liquid. Every transducer has an independent spring suspension which allows conducting inspection on the rough surfaces. The tomograph is designed to test the concrete, reinforced concrete and stone with one-sided access to estimate integrity of material, locate inclusions, cavities, voids, delamination's, not grouted areas and cracks and measure thickness of the object.

Specifications:

Scanning device type	Built in matrix antenna array type
Number of transducers (range) in the antenna array	Minimum 48 Nos
Transducer type in the antenna array	It should be low frequency transverse (shear) wave transducer. Dry point contact with ceramic wear tips are preferred
Transducer operating frequency range	25 kHz to 85 kHz
Nominal frequency of transducers	50 kHz
Inspection depth in concrete	Minimum 1000 mm
Type of material to be scanned and its applications	Concrete, reinforced concrete, marble, granite, plastic, prestressing tendons Detection of cavities, voids, delaminations, cracks (concrete, reinforced concrete and stone).

Image reconstruction	<p>2-D images to create a 3-D model of the test object. The user can manipulate the 3-D model by rotating it or looking at different orthogonal planes.</p> <p>Should able to construct A-scan, B-scan and C-scan images.</p>
Reconstruction	<p>The transit time measurement shall be analyzed using the synthetic aperture focusing technique (SAFT) to reconstruct, in real time, a 2-D image of the cross section.</p>
Power	<p>Built in rechargeable battery, with backup time not less than 4 hrs. (as per Indian Conditions)</p>
Operating temperature range	<p>-10 to 50 deg °C</p>
Data communication with computer/laptop/PDA	<p>USB/any other wireless</p>
Cables	<p>Complete set of necessary cables to be supplied along with the equipment (if required)</p>
Software capabilities	<p>Should display graphically: voids, cavities, cracks, etc., calculate the depth of concrete member and cover thickness in engineering unit. The collected data set can be transferred to the external PC/laptop/PDA for processing.</p> <p>Software shall have the capability to represent collected data from the instrument as tomograms and as well as 3D images.</p>
Raw Data export	<p>Data extraction from the device should be provided for further processing in Matlab.</p>

PC/Laptop/PDA requirements	<p>Laptop or PDA compatible with the software and hardware of the equipment.</p> <p>For Laptop: Minimum RAM: 8 GB, Minimum HDD storage = 1TB</p> <p>For PDA: Minimum RAM: 4 GB, Minimum HDD storage = 512 GB</p>
Other features	<p>Suitable lifting handles to be provided for handling. Hard carry case to be provided.</p> <p>The system should be able to work with standard Indian electrical supply (230 V AC, 50 - 60 Hz mains).</p>
Warranty	<p>The supplier shall provide warranty for a minimum of Three year after installation and commissioning of the equipment.</p>
Optional	<ol style="list-style-type: none"> 1. Tool kit for checking the functioning of dry point connector (DPC) element 2. Additional DPC elements, 10 Nos.