

Specification of Portable Digital Ultrasonic Flaw Detector

Technical Specifications:

Sl. No.	Features	Specification
1.	Display	<ul style="list-style-type: none"> i. Full VGA Colour LCD¹ Touchscreen ($\geq 640 \times 480$ pixels) ii. Screen size ≥ 7 inch iii. Refresh Rate ≥ 60 Hz² iv. Operation: Touch Screen and keys v. Available views: A, B, C
2.	Gain Setting	0 to 110 dB ³ , Steps ≤ 0.5 dB or better
3.	Dynamic Range	≥ 100 dB
4.	Velocity Range	1000 m/s to 15,000 m/s or better
5.	Internal data Storage	≥ 64 GB
6.	Time base	<ul style="list-style-type: none"> i. Range: 3mm to 15 m in steel ii. Delay: $-10 \mu\text{s}$ to $3500 \mu\text{s}$
7.	Weight	≤ 2.5 kg (including Battery)
8.	Brightness Control	Automatic/Manual
9.	Transmitter for Pulse Echo mode	<ul style="list-style-type: none"> i. PRF⁴ ≥ 10-2000 Hz, Steps 10 Hz ii. Shape: Negative Unipolar iii. Optionally : Square wave Pulser iv. Pulse Width range: 40 to 2500 ns or wider v. Damping : 50 & 400 Ohm
10.	Input/Outputs	<ul style="list-style-type: none"> i. Probe connector : Lemo 00
11.	Zoom	Normal A Scan to Full Screen
12.	Linearity	<ul style="list-style-type: none"> i. Horizontal $\pm 1\%$ or better ii. Vertical $\pm 3\%$ or better
13.	Compliance	ISO 22232-1 or equivalent standard
14.	Environmental Protection	<ul style="list-style-type: none"> i. IP 67 or equivalent standard
15.	Language	English
16.	Operating Temperature	0°C to 50°C or wider

¹ LCD—Liquid Crystal Display

² Hz—Hertz

³ dB—Decibel

⁴ PRF—Pulse Repetition Frequency

17.	Operating Modes	Pulse Echo, Dual, Through Transmission
18.	Frequency Range	0.5 MHz to 25 MHz or better
19.	Amplifier	Broadband, ≥ 4 Digital Filter Settings
20.	Probe Delay Range	0 μ s to 750 μ s or higher, Continuously Variable
21.	Noise Suppression/Rejection	$\geq 80\%$ FSH ⁵ , Selectable Damping Positions
22.	Signal Display Formats	Full Wave Rectified, RF, Rectified Positive/Negative
23.	Gates	<ul style="list-style-type: none"> i. Number: ≥ 2 Independent Gates ii. Size: Compressible to 0.5 mm, Expandable to 100% of the range (time scale) iii. Measurement Modes: flank, peak, zero crossing (before & after), etc.
24.	Digital Readout	Amplitude, Sound Beam Path/Thickness, Projection, Depth
25.	Freeze Function	Capable of freezing peak Echo dynamics pattern
26.	Auto Calibration	Velocity, Probe Zero Adjustment
27.	Memory	≥ 50 Calibration Settings, ≥ 200 'A' Scan Images
28.	DAC ⁶	Digital DAC Plotting, Height Adjustable
29.	DAC Patterns	Peak to Peak, Smooth Parabolic, TCG Activation
30.	TCG ⁷	≥ 16 points, 100dB dynamic, 90dB/40 ns slope
31.	Additional Features	DGS Flaw Sizing, AWS Weld Inspection
32.	Recording	Video Recording Capability for C scan (USB output port shall be present for this)
33.	Scanning	A, B and C Scan Display
34.	Data Management	Windows-based Interface Software, USB/RS-232 Ports
35.	Power	<ul style="list-style-type: none"> i. AC⁸ Mains to equipment power cord ii. Rechargeable Battery-2Nos iii. Operation time of each battery: ≥ 5 Hrs
36.	Accessories	Protective Leather Case, Rolling Transportation Case

⁵ FSH—Full Screen Height

⁶ DAC—Distance Amplitude Correction

⁷ TCG—Time Corrected Gain

⁸ AC—Alternating Current

37.	Upgradability	Software Upgradable
38.	Holders	<ul style="list-style-type: none"> i. Detachable magnetic pipe stand ii. Belt holster

General Terms & Conditions:

Sl. No.	Requirement	Specification
39.	Standard Item	Model from a reputed manufacturer
40.	OEM ⁹ /Authorized Dealer	The product shall be supplied from either OEM or from the authorized dealer of the OEM (in such case Original authorization certificate shall be submitted along with a technical quote)
41.	System Type	No assembled/integrated systems shall be entertained
42.	Installation & Training	Supply, install, commission, and train VSSC personnel for 2 days
43.	Customer References	List of existing customers in India or two international customer certificates
44.	After-Sales Service	Service facility in India with trained personnel
45.	Spare and Service Availability	Minimum 7 years availability, OEM support commitment letter shall be submitted
46.	Warranty	2 years from installation & commissioning
47.	AMC ¹⁰	Separate quote for post-warranty AMC
48.	AMC Scope	<ul style="list-style-type: none"> i. Number of visits: 2PMV¹¹ and any number of BM¹² visits (at free of cost, if required) per year ii. Annual checks iii. Calibration iv. Software updates (if any)
49.	Breakdown Response	Attend breakdowns within 2 working days
50.	Essential Accessories/spare	Quote for all essential concomitant accessories/spare

⁹ OEM—Original Equipment Manufacturer

¹⁰ AMC—Annual Maintenance Contract

¹¹ PMV—Preventive Maintenance Visit

¹² BMV—Breakdown Maintenance Visit

51.	Documentation	Certificates of warranty, operational compliance, safety & environmental conformities, operating manual (in English language)
52.	Compliance Sheet	Detailed compliance sheet with documentary evidence required

