Technical Specification for 16:64 PAUT and TOFD to achieve simultaneous inspection of PA & TOFD

	Conventional UT	Phased Array	TOFD	Thickness Measurement
System				
No. of Channel	1	16	1/2/4	——
Probe Connector	LEMO 00, 2 pcs	Tyco, 1 pc	LEMO 00, 2/4/8 pcs	——
Max. Supporting Elements	2	64	2-8	——
Pulser	Negative square	Bi-polar square	Negative square	Negative square
PRF	Adjustable 10-2000Hz, step: 20Hz	100Hz-10KHz, step:100Hz	Adjustable 10-2000Hz, step: 20Hz	200Hz
Pulse Voltage	50V~400V, min. step 1V	10-110V, min step 2V	50V~400V, min. step 1V	50-400V
Pulse Frequency	——	2-10MHz, step 0.5MHz	——	——
Pulse Energy	——	4 levels	——	——
Pulse Width	30-1000ns, step:10ns	——	30-1000ns, step:10ns	30-1000ns
Damping	25/75/200/1000 Ω ,4 levels	——	25/75/200/1000 Ω ,4 levels	——
Pulser Delay	——	0-20μs, resolution 5ns	——	——
Pulser Focusing	——	Single point focusing	——	——
Receiver				
Gain	0-110dB, step:0.5/2/6/12dB	0-80dB, step:0.1/0.5/2/6/12dB	0-110dB, step: 0.5/2/6/12dB	0-110dB, manually adjustable(0.5/2/6/12dB)/ auto(for auto-search or auto-gain)
Bandwidth	0.5-20MHz（-3dB）	0.7-20MHz (-3dB)	0.5-20MHz（-3dB）	0.5-20MHz
A/D Sampling Rate	170MHz/12bits	100MHz/12bits	170MHz/12bits	——
Sampling Point	1024, 16bit/ point	Adjustable 256/512/1024, 16bit/point	1024, 16bit/ point	——
Rectification	Positive/ Negative/ Full/ RF	Positive/ Negative/ Full/ Filter/ RF	RF	RF/ Full/ Positive/ Negative
Receiver Delay	——	0-20μs, resolution 2.5ns	——	——
Receiver Focusing	——	Max. range: 1008 foci per scan line	——	——
Filter	10 levels: 1-4/0.5-10/2-20/ 1/2.5/4/5/10/13/15MHz	6 levels: 0.7-4/2.5-7/4-8.5/7-10/ 9-15/0.7-20 MHz	6 levels: 0.5-5/0.5-10/ 3.5-10/0.5-15/ 5-15/0.5-20MHz	——
Reject	0-80%, step:1%	——	——	——
Scan				
Scan Type	A/B	A/S/L/C/D	A/B/D	——
Trigger Mode	——	Time-based/ Encoder	Encoder	——
Scan Length	——	⩾3m (with 16G SD card, encoder precision:0.5mm)	⩾90m (with 16G SD card, encoder precision:0.5mm, 4-ch TOFD simultaneously)	——
Focal Laws	——	512	——	——
Scan Angle Range	——	-89°~+89°, step 1°	——	——
Angle Spacing	——	0.1°-5°, step 0.1°	——	——
Line Average	——	——	4 levels, 1/2/4/8	——
Focus Position	——	6-500mm, step1mm	——	——
Focal Mode	——	Depth, Sound Path	——	——
Basic				
Range	0-15000mm, min. display range 5mm	0-1000mm, min. step: 0.01mm, min display range 3mm	0-15000mm, min. step:0.1mm	0.5-600mm (subject to probe, material, temperature and selected configuration), display range 5-1000mm
Material Velocity	500-15000m/s, min. step:1m/s	500-15000m/s, min. step:1m/s	500-15000m/s, min. step:1m/s	500-15000m/s, min.step:1m/s
Display Delay	0-1000mm, min. step: 0.01mm	0-1000mm, min. step: 0.01mm	0-1000mm, min. step: 0.01mm	0-1000mm, min. step: 0.01mm
Probe Zero	0-200us, min. step: 0.01us	——	0-200us, min. step: 0.01us	0-200us
Probe Flank	0-100mm, step: 0.01mm	——	0-100mm, step: 0.01mm	——
Wizard	DAC, AVG/ DGS, Angle calibration, Auto calibration (velocity, zero)	Scan wizard, velocity/ delay/sensitivity/ TCG calibration	PCS Calculation, Probe Zero Calibration, Ultrasound Parameter, Scan Wizard, Time Window	——
Calibration	Zero, Velocity, Angle	Zero, Velocity, Delay, Sensitivity, TCG	PCS, Wedge Delay, PCS/Depth, Time Window, Probe Zero	a. Fast zero point calibration with the built-in test block. b. User-defined calibration(zero point calibration/ zero point+ velocity calibration)

	Conventional UT	Phased Array	TOFD	Thickness Measurement
Basic				
Test Point Selection	Peak/ Flank/ J Flank/G Flank/ G Peak	Peak/ Flank/ J Flank/ G Flank/ G Peak	——	——
Measurement	Three gates: to measure echo amplitude, amplitude dB difference, sound path, Ra/ Da	Three gates for each A scan, max. 18 gates: to measure echo amplitude, sound path, Ra/ Da	Flaw height and length measurement.	Measurement Mode: Standard (R-B1, transmit pulse to the first echo.) All Measurements using Zero Crossing.
	Cursor: two cursors to measure horizontal and vertical position of B scan and distance between cursors (active when optional B scan function is available.).	Cursor: two cursors to measure horizontal and vertical position of B scan and distance between cursors on B/C/D scan.	Cursor: two cursors to measure horizontal and vertical position of B scan and distance between cursors (active when optional B scan function is available.).	Measurement Function: Standard/ minimum/ maximum/ average/ difference
Gate Mode	Normal, Tracing	Sound Path, Depth		Gate A is selected in standard measurement mode
Gate Start	Full range	Full range	——	0-1000mm, step is adjustable
Gate Width	Full range	Full range	——	1-1000mm, step is adjustable
Gate Thresh	10`90%, step: 1%	10`90%, step: 1%	——	10`90% or -10`-90%, step: 1%
Display Resolution	——	——	——	0.001/0.01/0.1 mm (0.0001/0.001/0.01 inch)
Display Error	——	——	——	0.80～9.99mm ± 0.05mm 10.00～99.99mm ± (1‰H + 0.04)mm 100.0～400.0mm ± 3‰H mm With TG5-10L probe, H is thickness of the detected material
Storage	——	——	——	Measurement files, data file, screen shot storage, recall and delete function and the storage is up to the SD card.
Display Mode	——	A, B, C, D, A+B, B+C, A+B+R, A+B+C+R...	——	A scan+ big reading/A scan+ data grid+ small reading/data grid+ big reading
Data Files	——	——	——	1D/2D/3D file format, measured value is recorded and displayed in grid table: record length and conversion mode is user-defined. Each data package includes measured value, basic parameter setup and A scan wave data.
Measurement				
Curve Function	DAC: Max. 6 lines&16 points for each line AVG/DGS	TCG: Max. 6 lines, max. 16 points for each line	——	——
Auxiliary Function	Coordinates switch (sound path/ depth/ horizontal), auto gain (single/ continuous), second leg color, wave compare, gate expansion, wave filling, peak envelope, auto freeze, Cineloop, screenshot	Auto gain: Single/ Continuous Auto Search: Search the highest echo amplitude scan line within gate range in B scan. BEA(Backwall Echo Attenuator)	——	Auto search (Off/On-Proper display range, gain and gate position can be adjusted automatically based on the measured waveform echo, which improves measurement efficiency.)/ freeze/ auto gain/ history reading bar/ last reading maintain
Alarm Signal	Signal and sound alarm: positive/ negative	Signal and sound alarm: positive/ negative	——	Upper and lower limit alarm (sound, signal and data color).
Display Measure Value	——	8 positions can be user-defined.	——	——
Data Analysis	——	Image mode switch, image gate dynamic reconstruction and report generation	LW/BW straightening/ removal, contrast adjust, gain adjust, zoom, color scale adjustment, test report generation,	Data file, measurement file, screenshot file can be played, analyzed and report generated on SuporUp software.

	Conventional UT	Phased Array	TOFD	Thickness Measurement
Measurement				
Tube Wall Thickness Measurement	——	——	——	With a TG5-10L probe, it can measure steel tube with diameter not less than 20mm and wall thickness not less than 2.0mm.
Measurement Times	——	——	——	4/8/16/32
Testing Index				
Time Base Linearity	≤0.5%	——	——	——
Vertical Linearity	≤3%	——	——	——
Amplitude Linearity	≤±2%	——	——	——
Attenuator Precision	20dB±1dB	——	——	——
Dynamic Range	⩾32dB	——	——	——
Software				
Optional Software	API AWS TCG B scan Flat Weld Groove CSC(Curved Surface Correction) Crack Height Measurement UT Probe Spectrum Analysis	PA Groups Flat Weld Groove Flat Weld Solution Angle Weld Solution Simultaneous Display of PAUT and TOFD Software C Scan In-Depth Corrosion Solution Small Pipe Girth Weld Solution Probe Element Testing	Can be upgraded to 2-ch TOFD Can be upgraded to 4-ch TOFD SAFT	CoatTHK Echo to Echo MULTI-Layers Measurement B Scan V PATH TDG TEMP

General Technical Specification	
Display Screen	8.4" high brightness TFT LCD, 800×600 pixels
Dimension (W×H×D)	284×220×90(mm)
Weight	3.65 kg with battery
Battery	Smart lithium battery, 1 pc (0.55kg)
Battery Capacity	7.5 Ah/pc, operation time more than 4 hours for PAUT, 5 hours for UT/TOFD.
External Power Supply for Adaptor	AC 100-240V 50Hz/60Hz
Adaptor Output	15V DC
Power	26VA for PAUT, 20VA for UT/TOFD
Data Storage	Standard SD card (16G)

General Technical Specification	
Input/Output	
USB Connector	2 pcs
Ethernet Connector	1 pc
Video Output	VGA port
Encoder Connector	1 pc (14-core)
Environment Tests	
Operation Temperature	-10℃-45℃
Storage Temperature	-20℃-60℃
IP Code	IP65