PHASCAN
Portable Phased Array

Portable Ultrasonic
Phased Array Flaw Detector

DOPPLER®

Phascan Portable Phased Array Series

Phascan Portable Ultrasonic Phased Array Flaw Detector is a high-level phased array inspection instrument which was developed by Doppler for general-purpose and superior performance.

Phascan focuses on positioning in practical applicability and advanced technology, and is suitable for machinery, transportation, oil and gas, aerospace and other fields.

Based on the actual inspection requirements, the development combines existing development and manufacturing of advanced probe technology with hardware, software and field application

Powerful Function

■ Embeded focal law calculator, with four kinds of scan methods namely linear, sectorial, depth and static
■ Four kinds of focus types available：True Depth, Sound Path, Projection, and Focal Plane
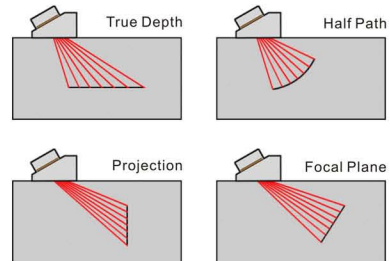
High Performance

■ 32/128 pulser/receiver channels for phased array inspection, with independent channels for high- performance single channel UT function
■ Negative square-wave emission, with resolution up to 2.5ns
■ PRF up to 20KHz
■ With bandwidth of 0.5-15MHz，it is compatible with most phased array probes

Perfect Data Processing Ability

■ Real-time data acquisition, online and offline data analysis
■ Up to 1024 focal laws, meet the high-speed scanning rate & avoid data loss
■ SD card or external USB device selectable for data storage
■ Test report can be generated directly in the instrument or offline on computer generated

Multipurpose for One Machine

■ In addition to phased array function, the Phascan also has two pairs of independent channels to support normal A-Scan testing
■ It can also achieve simultaneous inspection of phased array and TOFD, as a true multifunctional detector

More Accurate on Measurement Result

■ Delay and sensitivity calibration can be performed on each beam, with more accurate measurement results.

Simultaneous Inspection of TOFD & PA

■ Dual independent channels for TOFD inspection, parameters can be set independently for each channel.
■ Dual - PA & TOFD with two different settings, which greatly increase scanning coverage rate and avoid data loss effectively.

True Depth

Half Path

Projection

Focal Plane
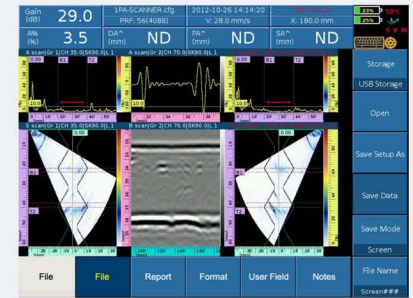
Touch Screen Interface

■ The revolutionary touch screen interface offers simple and quick navigation, enhanced value and text input functions.
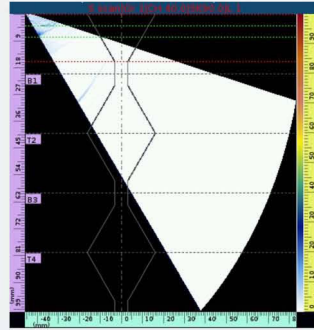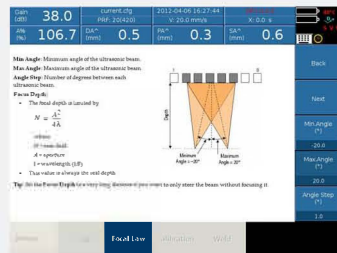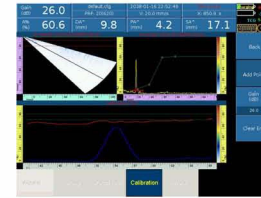

Weld Illustration Function

■ Able to read analysis flaw signals, and locate density of the defects, to ensure measured parts or materials could meet the industrial welding standards.

Wizard

■ The wizard menu is used to set all essential parameters, users can complete configurations through wizard.

■ Able to select materials, shapes from detected components and display the velocity of shear and longitudinal wave.

■ Group copy wizard use for fast creation of symmetrical two-probe inspections.

■ Able to select or define a probe model from database, Doppler's probes could be auto detected.

■ Wedge selection or user-define.

■ Wizard guidance for phased array, conventional UT, and TOFD channels.

■ Focal law configuration.

■ Detailed interactive illustrated help menu for every step in the wizard.
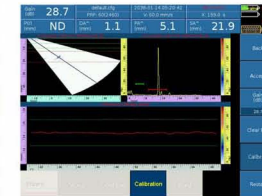
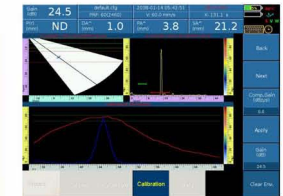■ Weld Illustration and Ray Tracing.

## Calibration

■ Calibrates the velocity/ wedge delay/ sensitivity etc. to improve detect accuracy.

■ Ensure each focal law to be used as a single-channel conventional flaw detector.

■ Step-by-step guidance through Velocity, Wedge Delay, Sensitivity and TCG calibrations.

■ Simple, easy-to-use interface that enables all focal laws to be visualized simultaneously for a particular calibration task.

■ Interactive help menu with detailed graphics and definitions, which is available in each step of Wizard.

TCG Calibration

Velocity Calibration   Wedge Delay Calibration   Sensitivity Calibration

Data Acquisition / Analysis / Management

■ Easy-to-use interface with automatic or semi-automatic scanner systems, and simple wheel encoders.

■ Encoder configuration for clock, and single or dual axis inspections.

■ Manual control maximum scan speed, PRF auto adjustments according to scan speed.

■ Data storage for full A-scans, S-scans /C-scans available offline.

■ Interactive analysis on A-scans, B-scans, S-scans and C-scans available in single or multigroups.

■ Equipped with reference and measurement cursor, easy to position and record flaw data.

■ All Readings are available online, or off-line when full A-scans were being saved in data files.

■ Data storage options for internal memory, SD card or USB media devices, foolproof data management.
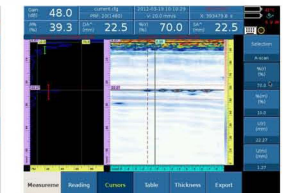
Reporting

The Phascan is designed to inspect, analyse and generate reports directly on the instrument, or off-line on computer.

■ The reports created on the Phascan include an indication table that can be customized with additional readings.

■ A high resolution image of the current display is included in the report when selected.

■ The auto-generated report contains relevant parameters for the instrument, software, calibration, UT parameters, phased array parameters, scanner setup, and flaw reporting.

■ Reports are stored and viewed on the instrument, and can also be saved as HTML documents on computer.

■ Reports are fully customizable.

Phascan Data Analysis and Reporting with Drawscan

■ Drawscan is the perfect PC-based software companion to the Phascan instruments, and seamlessly imports Phascan files for advanced processing and analysis in Drawscan.

■ Defect readings can be added into indication-table database, and also add comments to every defect indicator.
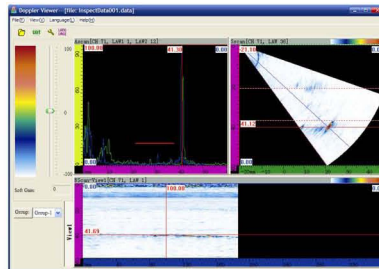
Oil & Natural Gas

Portable Accurate Phased Array Ultrasonic Solutions

■ In considering of the characteristics of poor conditions for the oil and gas industry, normally user places detection equipment or install further away from the pipeline. Phascan phased array system is relative portable, and easily to finish pipe flaw detection work. Powerful cursor and the gate measurement tools help to judge the position and size of defects, output more precise measurements.

Typical Oil & Gas Inspection Applications

Storage Tanks | Nozzles and Flanges | Welds | Heavy-wall Pressure Vessels

Greater Productivity

■ Based on the Industrial Welding Standard, at least three angles for weld testing are needed in normal testing way. Phascan can support up to 128 element probes, each excitation supports up to 32 elements. Operators are able to achieve multi-angle of large-area scanning without changing probes or wedges, which greatly improve the efficiency of flaw detections.

Multi-group Inspection to Decrease Downtime

■ As an advanced solution, phased array can detect more areas than traditional instruments. In addition to the above advantages, Phascan can also set up multiple groups working at the same time, covering large detection areas and accelerating the detection speed.

■ A, B, C and S scans can be displayed individually or together. Multi-Color scheme options are available for A scans, to get more detailed & clear images, easy to analyse & read the flaw echos.
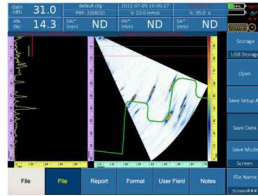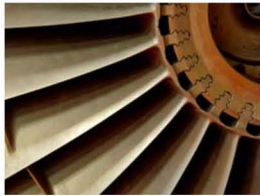
GIS Straight Conductor Weld Inspection

Doppler Cobra Phased Array Probe
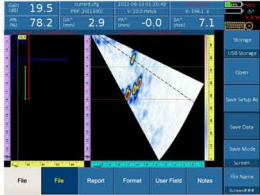
Aerospace

Typical Energy and Power Inspection Applications

Welds | Turbine Blades | Pressure Vessels | Rotors | Piping | Coarse Grain Materials

Complex Workpiece Graphical Schematic Function

For Turbine Leaf Root Inspection

Matching a Variety of Frequency Phased Array Probes to Solve Complicated Problems of Aerospace Testing

■ Phascan instrument, with bandwidth of 0.5-15MHz, can match most of the phased array probes as well as the high-frequency ones to solve complex inspection problem in aerospace. Doppler independently developed and produced a series of high-performance phased array probes can better match Phascan to complete difficult inspection problems.

Convenient and Practical Solutions

■ Phascan weights a mere 4.5kg, it is an extremely convenient and flexible tool ideally suited for site inspection. In addition, the Phascan with multi-channels which means you can switch between phased array and two conventional channels.

Typical Aerospace Inspection Applications

Scribe Line | Landing Gear | Welds | Composite Structures (Delamination and Disbond)
Aircraft Engine Blades | Turbine Disks | Compressor Disk

Composite Material & Plate Corrosion Inspection

Doppler Wheeled Phased Array Probe
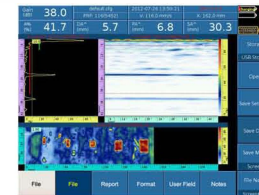
Energy & Power

Save Inspection Time

■ In railway system and automotive industry, the high efficiency of flaw inspection is required. The Phascan with PRF up to 20KHz and maximum focal laws up to 1024, can meet the needs of high-speed testing without data loss, and greatly reduce inspection time. Due to its portability, it is suitable for long distance inspection too, therefore Phascan is a prerequisite inspection tool for transportation industry.

Typical Transportation Inspection Applications

Rails | Welds | Spot Welds | Axles | Shafts | Spindles | Brake Discs | Joints

Support of Standards and Internal Specifications

■ Each beam in the focal laws can be calibrated and meets the relevant standards and specifications of the conventional channel, which makes the measurement results more accurate and authoritative.

Long Battery Life Operation for Long Distance

■ Bridge, rail or wheel flaw inspection is often in areas far from mains electricity supply. The Phascan has a long 6-hour battery life which is very favorable for long-distance inspection.

Transportation

Performance

Parameter		PA module	Conventional UT
Config.	Pulser / Receiver	32/128	2/4
	Range	9900µs	9900µs
	Velocity	635-15240m/s	635-15240m/s
	Focal Law	1024	
Pulser	Test Mode	PE / PC	PE / PC / TT / TOFD
	Voltage	50V / 100V	50V / 100V / 200V
	Pulse Shape	Negative Square Wave	Negative Square Wave
	Pulse Width	30-500ns	30-500ns
	Rise Time	<8ns	<8ns
		20KHz	20KHz
	Delay	10µs / 2.5ns	10µs / 2.5ns
	Damping	NA	50Ω/ 500Ω
Receiver	Gain	0-80dB	0-80dB
	Bandwidth	0.5-15MHz	0.5-15MHz
	Input Impendance	200Ω	200Ω
	Input Capacitance	60pF	60pF
	Delay	10µs / 2.5ns	10µs / 2.5ns
Scan/Display	Type	Linear/Sectorial/Static/Depth	NA
	Display Mode	A/B/C/S	A/B TOFD
	Unit	mm / inch	mm / inch
DAC	Points	16	
TCG	Points	16	
	Dynamic Range	40dB	
	Max Gain Slope	20dB/µs	
Gate	Gates	A / B / I	
	Threshold	0-98%	
	Trig Mode	Peak / Edge	
Report		HTML	
Data Storage	Storage Devices	USB Devices / SD Card	
Display Screen	Size	10.4 inch	
	Resolution	800*600 pixel	
	Type	TFT LCD Touch Screen	
I/O Port	USB	3	
	Internet	10/100M	
	Video Output	DVI / VGA Compatible	
	Encoder	Applicable	
Language		English / Chinese	
Power Supply	Power Supply	15V DC 4A	
	Battery	LithiumIon Battery	
	Charging	Operatable While Charging	
	Battery Life	6h	
Housing	Dimensions	325mm*230mm*130mm	
	Weight	4.5Kg (without battery)	