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MANUAL

PROFILE

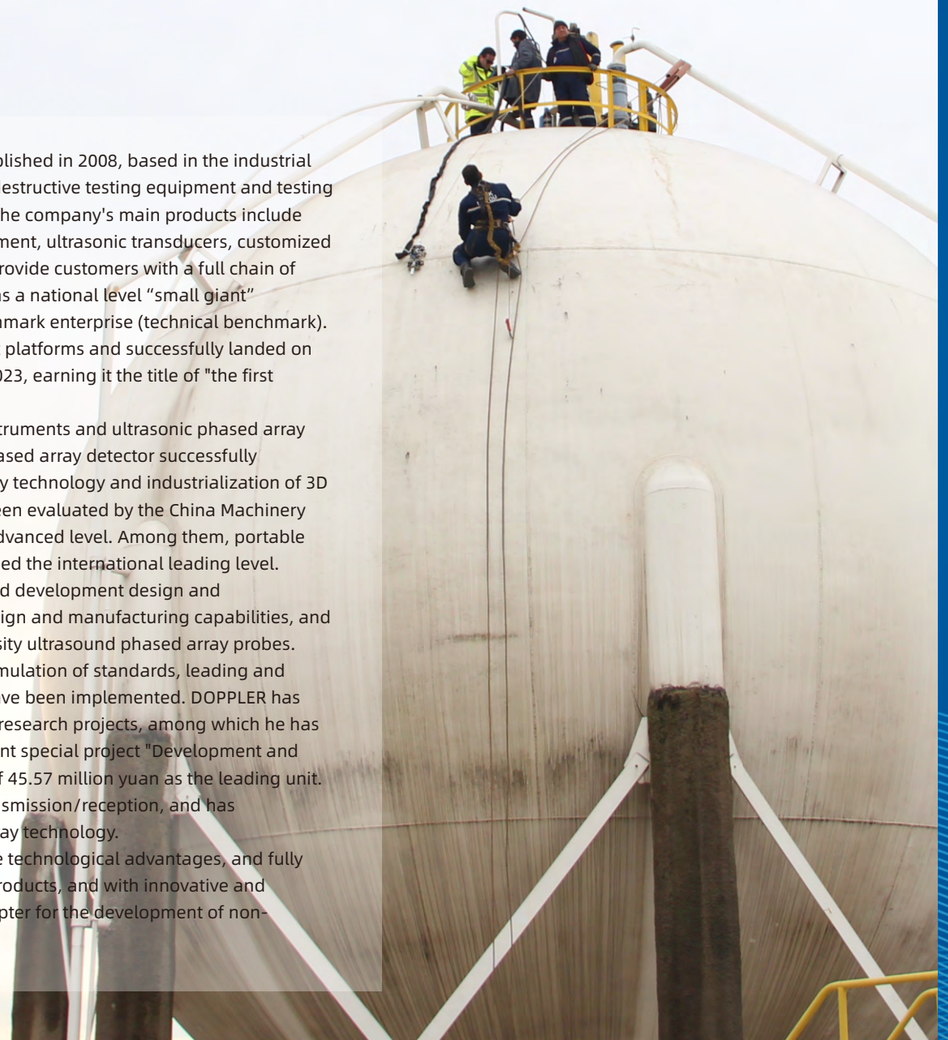
Guangzhou Doppler Electronic Technologies INC(stock code: 301528) was established in 2008, based in the industrial non-destructive testing industry. It is a professional provider of industrial non-destructive testing equipment and testing solutions, committed to building a world-class non-destructive testing brand. The company's main products include industrial ultrasonic phased array testing equipment, automated testing equipment, ultrasonic transducers, customized testing analysis software, and other testing supporting components, and can provide customers with a full chain of ultrasonic non-destructive testing products. The company has been approved as a national level “small giant” enterprise, a national high-tech enterprise, and a Guangzhou innovation benchmark enterprise (technical benchmark). It has established multiple provincial and municipal research and development platforms and successfully landed on the Shenzhen Stock Exchange Growth Enterprise Market at the end of August 2023, earning it the title of "the first domestic ultrasonic non-destructive testing stock".

DOPPLER was the first to achieve the localization of ultrasonic phased array instruments and ultrasonic phased array probes, breaking the foreign barriers. The first high-performance ultrasonic phased array detector successfully developed in China has been recognized as a national key new product. The key technology and industrialization of 3D real-time high-resolution TFM intelligent ultrasonic phased array project has been evaluated by the China Machinery Industry Federation, and its overall technology has reached the international advanced level. Among them, portable 3D-TFM imaging technology and related manufacturing technology have reached the international leading level.

DOPPLER has established an advanced high-end ultrasound probe research and development design and manufacturing system, with internationally leading 1-3 composite material design and manufacturing capabilities, and the ability to develop and produce high-frequency (25M) large-sized high-density ultrasound phased array probes.

As a leading enterprise in the industry, DOPPLER actively participates in the formulation of standards, leading and participating in the drafting of multiple national and industry standards that have been implemented. DOPPLER has hosted or participated in multiple national and provincial level major scientific research projects, among which he has undertaken the national major scientific instrument and equipment development special project "Development and Application of New Ultrasonic Phased Array Instruments" with a total funding of 45.57 million yuan as the leading unit. It has successfully overcome the industry challenge of 256 channel parallel transmission/reception, and has established the company's leading position in the field of ultrasonic phased array technology.

In the future, DOPPLER will continue to innovate in technology, maintain its core technological advantages, and fully expand its industry application fields. Based on and driven by stable existing products, and with innovative and customized application solutions as new breakthroughs, it will write a new chapter for the development of non-destructive testing!



CULTURE

Philosophy

Pursuit of Excellence—Constantly Improving, and Try the Best

Honest and Trustworthy—Be Sincerely, and Keep the Promise

Solidarity and Cooperation—Integrating Resources and Create a Prosperous Business

Mission

Service to the Community for the Benefit to Human Safety

Vision

Creating a World-Class NDT Brand

Core Values

Love, Integrity, Innovation, Dedication

HONOR

High-Tech Enterprise of China

Hundred Innovation Benchmarking Enterprises in Guangzhou

National -Lever New Special Expertise Enterprise

National Key New Product Certificate

Certificate of National Torch Program Project

CE Certificate

Certificate of Adopting International Standard Product Mark

Guangdong Province High Tech Product Certificate

European EN ISO 22232 -2 Standard Compliance Certificate

ISO9001 Quality Managemet System Certification

CONTENTS

Instruments

Phased Array Probes

Scanners

Conventional UT Probes

Ultrasound Probes for Medical and Research

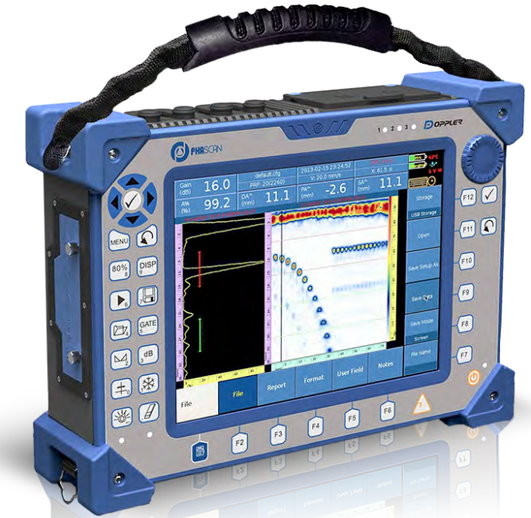
Instruments

PHASCAN Portable Phased Array

Phased Array Flaw Detector

New Upgrades
Support AutoCAD Import Function!

- 16/64, 32/64, 32/128, 32/128PR receiver/pulser channels for phased array
- Dual independent channels for high-performance TOFD detection
- Embedded focal law calculator, which can perform:
  - Four kinds of scanning modes: linear, sectorial, depth and static
  - Four kinds of focal types: true depth, sound path, projection, and focal plane
  - Optional display mode of A / B / S / C / TOFD, etc.
- Calibration is more convenient to implement and can be calibrated for each beam
- Multiple groups for parallel scanning, comparable to many instruments working simultaneously
- Negative square wave pulse, with resolution up to 2.5ns, PRF up to 20khz
- 10.4" TFT LCD color touch screen, resolution 800*600 pixel



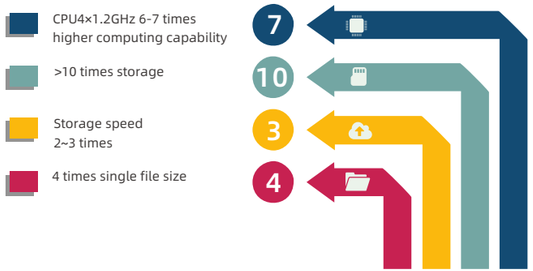
PHASCAN II
Portable Phased Array

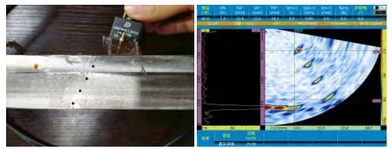
Phased Array Flaw Detector

PHASCAN II FEATURES

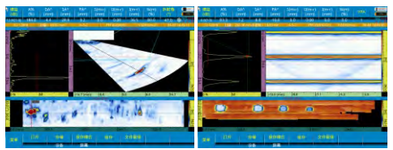
- 32/64PR, 32/128PR receiver/pulser channels for phased array
- 128GB SSD fast data storage
- Single data file up to 4GB
- 2D matrix array, 3D simulation
- CAD module import
- SDK
- Fast & Reliable
- Incredibly easy to use

PHASCAN II VS PHASCAN





Weld Detection of Dissimilar Metals in Austenitic Stainless Steel



Inspection of Pipe Seat Intersection Line

XY-dual Axis Scanning

PHASCAN VS PHASCAN II

Parameter		PhaScan		PhaScan II	
		PA Channel	Conventional Channel	PA Channel	Conventional Channel
Configuration	Receiver / Pulser	32/128	2 / 2	32/128	2 / 2
	Range	9900μs	9900μs	9900μs	9900μs
Data Collection	Sampling Rate	100MHz	100MHz	100MHz	100MHz
	Max Length of A scan	8192	8192	32768	32768
	No. of Focal Laws	1024	NA	1024	NA
	Focusing Type	True Depth/Sound Path/ Projection/Focal Plane	NA	True Depth/Sound Path/ Projection/Focal Plane	NA
Pulser	Test Mode	PE / PC	PE / PC / TT / TOFD	PE / PC	PE / PC / TT / TOFD
	Voltage	50V / 100V	100V / 200V / 400V	50V / 100V	100V / 200V / 400V
	Pulse Shape	Negative Square Wave	Negative Square Wave	Negative Square Wave	Negative Square Wave
	Pulse Width	30-500ns	30-500ns	30-500ns	30-500ns
	Rise Time	<8ns	<8ns	<8ns	<8ns
	PRF	20KHz	20KHz	20KHz	20KHz
	Delay	10μs / 2.5ns	10μs / 2.5ns	10μs / 2.5ns	10μs / 2.5ns
Receiver	Gain Range	0-80dB	0-110dB	0-80dB	0-110dB
	Bandwidth	0.5-20MHz	0.5-20MHz	0.5-20MHz	0.5-20MHz
	Receiver Delay	10μs / 2.5ns	10μs / 2.5ns	10μs / 2.5ns	10μs / 2.5ns
Scan/Display	Scanning Type	Linear/Sectorial	NA	Linear/Sectorial	NA
	Display Mode	A/B/C/S,PA-TOFD	A/B/C TOFD	A/B/C/S,PA-TOFD	A/B/C TOFD
	Measure Units	mm / inch	mm / inch	mm / inch	mm / inch
TCG	Points	16		16	
	Dynamic Range	40dB		40dB	
	Max Gain Slope	40dB/μs		40dB/μs	
Report		HTML		HTML	
Data Storage	Pluggable Storage	USB Disk / SD Card		USB Disk / SD Card/SSD(Build-in)	
Display Screen	Size	10.4 inch		10.4 inch	
	Resolution	800*600pixel		800*600pixel	
	Type	TFT LCD Resistive Touch Screen		TFT LCD Capacitive Touch Screen	
I/O Port	USB	3		3	
	Internet	10/100M		100/1000M	
	Video Output	DVI/VGA Compatible		DVI/HDMI	
	Encoder	Single Axis		Dual Axis	
Language		English / Chinese		English / Chinese/ Russian	
Battery & Power Supply	DC Supply Voltage	15VDC 4A		15VDC 4A	
	Battery Type	Li-ion Battery		Li-ion Battery	
	Battery Life	6 Hours		6 Hours	
Case	Size	325mm×230mm×130mm		325mm×230mm×130mm	
	Weight	4.5Kg(Without Battery)		4.5Kg(Without Battery)	
Hardware	CPU	800MHz		4 × 1.2GHz	
	USB Disk	FAT32 / NTFS		FAT32 / NTFS	
	SD Card	8GB		128GB	
Software	2-axis C-Scan	N/A		YES	
	3D Beam Simulation	N/A		YES	
	Matrix Array	N/A		YES	
	Module Import	N/A		YES	
	Topview C-Scan	N/A		YES	
	TKY Geometry Import	N/A		YES	
	Real-time 3D imaging	N/A		YES	
	Multi-Touch Interface	N/A		YES	
	SDK	Half Support		Support	
	Online Monitoring	Half Support		Support	
	Sigle File Size	256M		1GB	

NOVASCAN 64

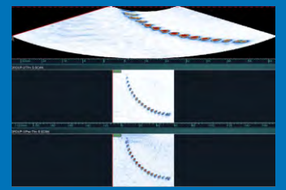
PAUT Detector with TFM/PWI

NOT JUST A PHASED ARRAY DETECTOR

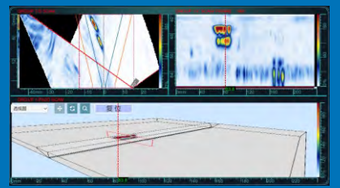
The device supports Matrix probe 3D TFM imaging, and one instrument has both 3D TFM, 2D TFM, and phased array functions, allowing for free switching. Multiple sets of TFM detection can be performed simultaneously with PAUT, UT, and TOFD, and displayed on the same screen. Phased array technology supports linear array, dual line array, dual matrix array probes, etc., and is suitable for the vast majority of weld and corrosion detection scenarios.

The high-end intelligent analysis technology unique to the instrument is designed for application scenarios such as corrosion detection, weld detection, and composite bonding detection. It can achieve intelligent defect recognition and high-precision measurement and analysis functions, greatly expanding the special application fields of the instrument. Coupled with the design advantages of Doppler's scanners and probes, it can solve many nondestructive testing problems.

- **High precision TFM detection (TFM/PWI)**
- **Real time 3D detection of phased array**
- **Two-dimensional scanning and intelligent analysis**
- **Simultaneous simulation of multiple focal laws**



Comparison of imaging effects between PA, TFM and PWI-TFM



PA-3D

Performance

Parameter		PA Module	Conventional UT
Configuration	Receiver / Pulser	64/64PR, 64/128PR	2 / 2
	Range	9900μs	9900μs
	Velocity	340-15240m/s	340-15240m/s
Pulser	Test Mode	PE / PC	PE / PC / TT / TOFD
	Voltage	20-120V / 10V	100V / 200V / 400V
	Pulse Shape	Bipolar Square Wave	Negative Square Wave
	Pulse Width	20-1250ns/2.5ns	25-1000ns/2.5ns
	Rise Time	<10ns	<10ns
	PRF	40KHz	40KHz
	Delay	20μs/2.5ns	20μs/2.5ns
Receiver	Gain	0-120dB	0-120dB
	Bandwidth	0.4-25MHz	0.5-26MHz
	Delay	20μs/2.5ns	20μs/2.5ns
Data Collection	Sampling Rate	100/200MHz	100/200MHz
	ADC	16bit	16bit
	Focus Type	True Depth/Sound Path/Projection/Focal Plane	NA
	Detection	FW/HW+/HW-/RF	FW/HW+/HW-/RF
Scan/Display	Type	TFM/Linear/Sectorial/Compound scanning	NA
	Display Mode	A/B/C/S/PA-TOFD TFM	A/B/C TOFD
	Unit	mm/inch	mm/inch
TCG	Points	16	
	Dynamic Range	40dB	
	Max Gain Slope	40dB/10ns	
Gate	Number	A/B/C/I + Custom Gate	
	Threshold	800%	
TFM	Resolution Ratio	1024 x 1024	
	Frame Rate	94Hz @ 256 x 256	
Report		WORD	
Data Storage	Pluggable Storage	EMMC（128G）+ SSD（Max 1T）	
Display Screen	Size	12.1 inch	
	Resolution	1280x800 pixel	
	Type	Industrial Grade LCD Screen	
I/O Port	USB	2USB3.0 + 1USB2.0	
	Internet	2(Top x86,1000Mb/s. Bottom FPGA,1000Mb/s)	
	Video Output	HDMI	
	Encoder	LEMO 16-pin	
	Multifunctional Interface	LEMO 14-pin	
Language		Chinese/English/Russian	
Power Supply	DC Supply Voltage	15V DC 100W	
	Battery Type	Li-ion 11.25V/99.6W	
	Battery Life	4hours	
Case	Size	362mm×254mm×121mm	
	Weight	4.7Kg	
IP Lever		IP65	

NOVASCAN

Phased Array Flaw Detector

High Precision TFM Detection

The device supports 3D Matrix TFM imaging, and one instrument has both 3D-TFM, 2D-TFM, and phased array functions, allowing for free switching. Multiple sets of TFM (TFM and PWI) detection can be performed simultaneously with PAUT, UT, and TOFD, and displayed on the same screen.

Powerful 3D View Functionality

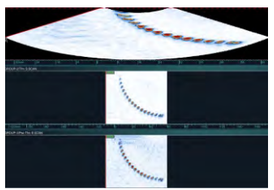
Real time display of the scanning status of the workpiece, and display the detected defects in 3D form. At the same time, the S-scan and A-scan corresponding to the probe position can be viewed to visually and quickly present the detection results.

Powerful Simulation Function

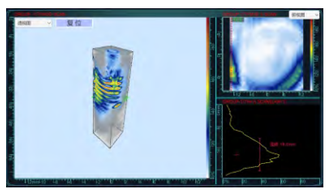
Equipped with a new scan planning process, it can achieve 3D focal law simulation, multi group simultaneous simulation and other functions, and greatly simplifies the user setting interface, enabling necessary steps such as process simulation and calibration to be completed in the shortest possible time.

More Comprehensive Applications

The device is equipped with a 2D encoding interface, which can achieve high-speed two-dimensional scanning; Supports matrix and dual matrix scanning, and can be used for testing austenitic stainless steel specimens. Equipped with a corrosion intelligent analysis module, it can be used for pipeline corrosion and similar detection, automatically identifying defects such as corrosion and thinning, and calculating defect area. Equipped with a composite/adhesive intelligent analysis module, it can be used for automatic identification of delamination, porosity and other defects in multi-layer composite bonding, welding and similar structural detection, and calculate the defect area.



Comparison of imaging effects between PA, TFM and PWI-TFM



Bolt 3D TFM

Performance

Parameter		PA Module	Conventional UT
Configuration	Receiver / Pulser	32/128	2 / 2
	Range	9900μs	9900μs
	Velocity	340-15240m/s	340-15240m/s
Pulser	Test Mode	PE / PC	PE / PC / TT / TOFD
	Voltage	50V / 100V	100V / 200V / 400V
	Pulse Shape	Negative Square Wave	Negative Square Wave
	Pulse Width	30-1000ns/2.5ns	30-1000ns/2.5ns
	Rise Time	<8ns	<8ns
	PRF	20KHz	20KHz
	Delay	0-20μs/2.5ns	0-20μs/2.5ns
Receiver	Gain	0-120dB	0-120dB
	Bandwidth	0.5-20MHz	0.5-20MHz
	Delay	20μs/2.5ns	20μs/2.5ns
Data Collection	Sampling Rate	100MHz	100MHz
	No. of Focal Laws	512(Customizable 1024)	NA
	Focusing Type	True Depth/Sound Path/ Projection/Focal Plane	NA
	Detection	FW/HW+/HW-/RF	FW/HW+/HW-/RF
Scan/Display	Type	Linear/Sectorial	NA
	Display Mode	A/B/C/S/3D/TopC	A/B(TOFD)
	Unit	mm	mm
TCG	Points	16	
	Dynamic Range	40dB	
	Max Gain Slope	40dB/μs	
Report		WORD	
Data Storage	Storage Devices	USB Devices / SSD (128G)	
	Single File Size	4G	
Display Screen	Size	10.4 inch	
	Resolution	1024*768pixel	
	Viewable Area	211mm*158mm	
	Type	IPS Capacitive Touch Screen	
I/O Port	USB	2	
	Internet	2 （Top x86,1000Mb/s. Bottom FPGA,1000Mb/s）	
	WIFI	Support USB External WiFi Transmission Customization	
	Video Output	HDMI 1.4b	
	Encoder	LEMO 16-pin	
Language		Chinese/English/Russian	
Power Supply	DC Supply Voltage	15V DC 100W	
	Battery Type	Li-ion 11.25V/99.6Wh	
	Battery Life	4 Hours	
Case	Size	360mm×260mm×130mm	
	Weight	6Kg(Without Battery)	
IP Lever		IP65	

FLEXSCAN Phased Array Flaw Detector

Flexscan is the latest PAUT flaw detector developed by Doppler. It's a continuity of Phascan, with excellent performance. With 43% volume and 22% weight reduced, also hardware and software optimized, Flexscan is ideal for on-site inspection.

- 16/64PR, 32/64PR receiver/pulser channels for phased array
- 8.4″ TFT LCD color touch screen, easy to operate
- PA, TDFD and conventional UT can be performed simultaneously
- Multiple groups for parallel scanning, comparable to many instruments working simultaneously
- Fast calibration of velocity, wedge delay, sensitivity, TCG and so on
- Fast setting of many kinds of common weld graphs
- Support autocad import function
- Optional display mode of A / B / S / C / TOFD / Offline 3D
- New upgraded offline data analysis software, more powerful

Performance

Parameter		PA Module	Conventional UT
Configuration	Receiver / Pulser	32/64	1 / 2
	Range	9900μs	9900μs
	Velocity	635-15240m/s	635-15240m/s
	Focal Law	1024	NA
Pulser	Test Mode	PE / PC	PE / PC / TT / TOFD
	Voltage	50V / 100V/130V	100V / 200V / 400V
	Pulse Shape	Negative Square Wave	Negative Square Wave
	Pulse Width	30-500ns	30-500ns
	Rise Time	<8ns	<8ns
	PRF	20KHz	20KHz
	Delay	10μs / 2.5ns	10μs / 2.5ns
	Damping	N/A	50Ω/200Ω
Receiver	Gain	0-80dB	0-110dB
	Bandwidth	0.5-18MHz	0.5-20MHz
	Input Impendance	200Ω	133Ω
	Input Capacitance	60pF	60pF
	Delay	10μs / 2.5ns	10μs / 2.5ns
Scan/Display	Type	Linear/Sectorial	NA
	Display Mode	A/B/C/S	A/B TOFD
	Unit	mm / inch	mm / inch
TCG	Points	16	
	Dynamic Range	40dB	
	Max Gain Slope	40dB/μs	
DAC	Points	16	
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	8.4 inch	
	Resolution	800*600pixel	
	Type	TFT LCD Touch Screen	
I/O Port	USB	2	
	Internet	10/100M	
	Video Output	HDMI	
	Encoder	LEMO 16-Pin	
Language		English / Chinese / Russian	
Power Supply	DC Supply Voltage	15V DC 4A	
	Battery Type	Li-ion Battery	
	Battery Life	4 Hours	
Case	Size	296mm×209mm×89mm	
	Weight	3.5Kg(Without Battery)	

BOARD SERIES

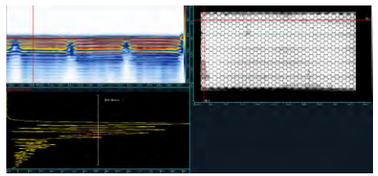
PAUT/UT Board

Robust - PAUT Board

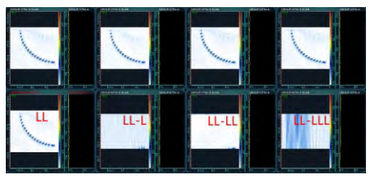
- 32/64PR, 32/128PR
- Optional display mode: A /B /S /C /3D
- Extended hardware and software can be provided to redevelop
- Use for all kinds of automatic phased array ultrasonic testing system platform

Powerful Simulation, Imaging, and Data Analysis Software

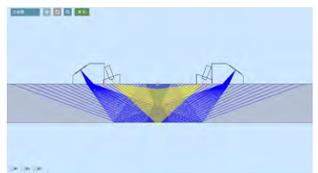
- Supports 3D-TFM and 2D-TFM technologies, with multiple sets of TFM (TFM and PWI) capable of detecting simultaneously with PAUT, UT, and TOFD, displaying on the same screen
- Phased array 3D real-time imaging
- Supporting simultaneous simulation of multiple focal law
- Diversified gate types for easy removal of interference signals
- Customizable intelligent defect analysis module, supporting automatic grasping and analysis of various types of defects such as weld defects, pipeline corrosion, composite plate delamination defects, etc



Two-dimensional scanning



Multigroups of TFM



Focus law calculator

Options		Parameter
Configuration	Receiver / Pulser	32/64, 32/128
	Velocity	340-15240m/s
Pulser	Test Mode	PE / PC
	Voltage	50V / 100V（Customizable 200V）
	Pulse Shape	Negative Square Wave
	Pulse Width	30-1000ns/2. 5ns
	Rise Time	<8ns
	PRF	40KHz
	Delay	0-20μs/2.5ns
	Damping	NA
Receiver	Gain	0-120dB
	Bandwidth	0.5-20MHz
	Delay	0-20μs/2.5ns
	Input Impendance	200Ω
Data Collection	Sampling Rate	100MHz
	Focal Law Number	512（Customizable 1024）
	Focus Type	True Depth/Half Sound Path/Projection/Any Surface
	Detection	FW/HW+/HW-/RF
	Synchronization	Initial Pulse/Gate
TFM	Max Point Number	Maximum 4 Million
	TFM Aperture	128 Transmit
	Focal Mode	TT,TTT,TTTT,LL,LLL,LLLL,TLT,TLL,LTT
Scan/Display	Type	Sectorial/Linear
	Display Mode	A/B/C/S/3D/Top-C
	Unit	mm
TCG	Points	16
	Dynamic Range	40dB
	Max Gain Slope	40dB/μs
Band Filter		Full Date Real Time Averaging
I/O Port	Internet	100/1000M
	Encoder	LEMO 16-pin
Gate	Gates No.	A/B/C/I + Customize
	Threshold	0-98%
	Trig Mode	Peak / Edge / Rectangle
Power Supply	DC Supply Voltage	15V/4.2A
Case	Size	350mm×245mm×55mm
	Weight	3.4Kg

Multiscan - Multi-channel Ultrasonic Board

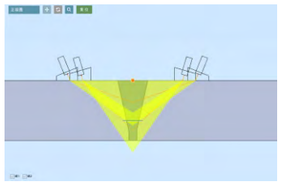
Multiscan independent multi-channel ultrasonic board adopts modular unit design, which can integrate multiple modules according to user needs to form a larger multi-channel system, such as 4 * n (n ≤ 8) channel ultrasonic testing system. The combination of boards is flexible and efficient, and various triggering modes and synchronization between devices are supported among various modules. With parallel sampling mode and PRF up to 10 kHz per channel, there is no pressure for high-speed automatic detection.

The multi-channel board provides a complete SDK development kit, which can carry out secondary development according to the application characteristics of different industries, and is suitable for automatic production lines in metallurgy, steel, railway, machinery and other industries.You can also create customized solutions according to user needs to realize the whole service from design to installation and commissioning. At the same time, Multiscan provides supporting general-purpose software, which is convenient for users to conduct basic research experiments. It is performance reliable and easy to maintain. All kinds of communication interfaces adopt universal design, which can better match automation production lines and provide guarantee for the quality control of industrial automation products.

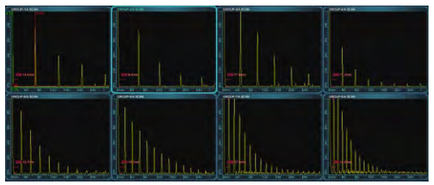
8-Channel Board

4-Channel Board

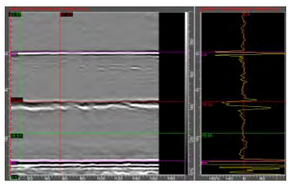
Software Features



TOFD Beam Coverage Simulation



Multigroups of Thickness Measurements



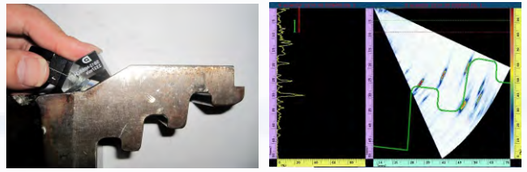
TOFD Analysis Module

Options		Parameter
Configuration	Receiver / Pulser	4/4, 6/6, 8/8
	Velocity	340-15240m/s
Pulser	Test Mode	PE / PC / TT / TOFD
	Voltage	100V / 200V / 400V
	Pulse Shape	Negative Square Wave
	Pulse Width	30-1000ns/2.5ns
	Rise Time	<8ns
	PRF	40KHz
	Delay	20μs/2.5ns
Receiver	Gain	0-120dB (Simulated 110dB)
	Bandwidth	0.5-25MHz
	Delay	20μs/2.5ns
Data Collection	Sampling Rate	100MHz
	ADC	12bit
	Max Length of A scan	16384
	Detection	FW / HW+ / HW- / RF
	Synchronization	Initial Pulse or Gate
Scan/Display	Display Mode	A / B(TOFD) / C / Strip Hart / FFT
	Unit	mm / inch
DAC	Points	16
TCG	Points	16
	Dynamic Range	40dB
Band Filter		Yes
I/O Port	Internet	1000 Mb/s
	Encoder	LEMO 16-pin
Gate	Gates No.	A/B/C/I + Customize
	Threshold	0-100%
	Trig Mode	Peak/Edge
Power Supply	DC Supply Voltage	15V/4.2A
Case	Size	360mm × 200mm× 60mm
	Weight	2.5Kg

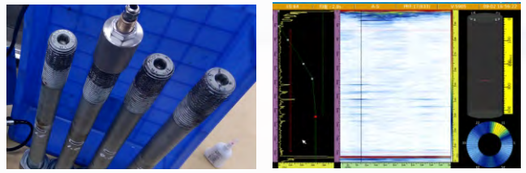
PHASED ARRAY

Ultrasonic Inspection Applications

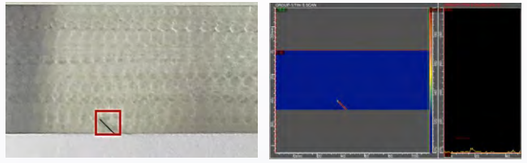
Straddle Type Turbine Root(AutoCAD Geometric)



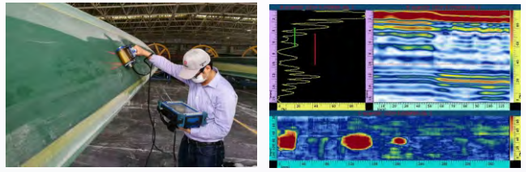
Wind Turbine Bolt Inspection(Cylindrical Guided Wave)



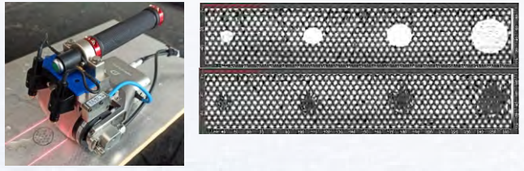
TFM Inspection of Groove



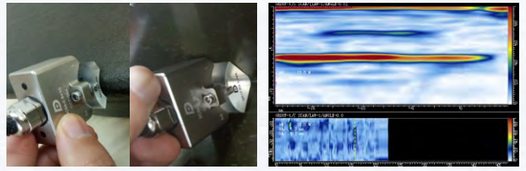
FPR Composite Wind Turbine Inspection



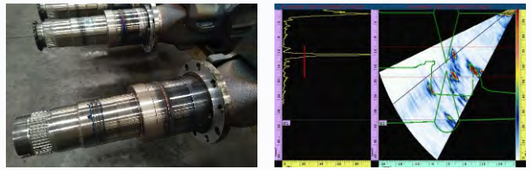
Inspection of Aviation Aluminum Honeycomb Panel



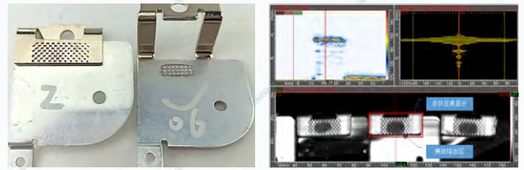
Aircraft CFRP Composite R Conner Inspection
(Concave Probe)



Electron Beam Welding(AutoCAD Geometric)

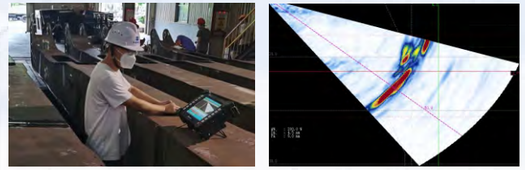


Quality Inspection of Vehicle Parts

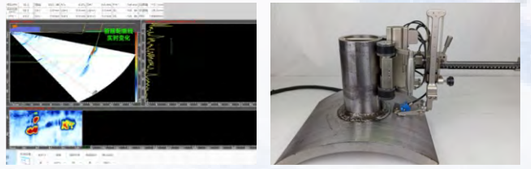


Circumferential Weld Inspection of Oil and Gas Pipelines

Fillet Weld Inspection of Concrete Pump Truck

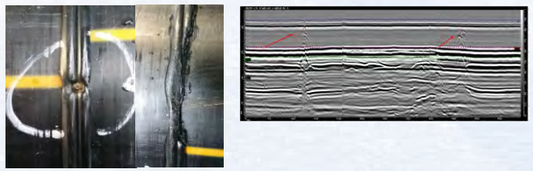


Fillet Weld Inspection of Socket
(Real-time Update of Weld Cross Section)

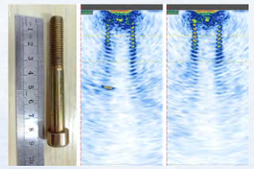


PAUT Inspection for Butt Joint of PE Pipeline

TOFD Inspection for Butt Joint of PE Pipeline



TFM Inspection of
Small Screw



Corrosion Inspection of
Boiler Water Wall

PA Probes

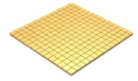
PHASED ARRAY Probes

Ordering Instructions

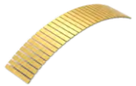
Doppler conventional ultrasonic phased array probes are widely used, with frequency range 0.5MHz to 20MHz, element number 8 to 1024 and internal element pitch 0.2mm to 2.0mm. The array configuration includes Linear(L), Matrix(M), Annular(A), Concave(C), Convex(V), wedge integrated, etc. Other types of probes can be customized according to customers' requirements. Wedge, connectors, adapters and extension cables can also be customized.


Linear


Focused Linear Array


2D Array


Flexible


Convex


Concave

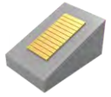

Focused Concave

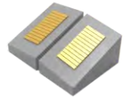

Annular

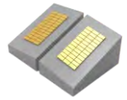

Daisy Arrays

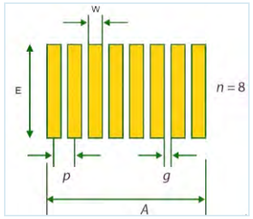

Annular Focusing


Circular Array


Wedge Integrated-Linear Array

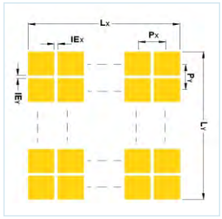

Dual Linear


Dual Matrix



1D Probe parameters

A: Active aperture
E: Elevation
g: Internal element spacing
w: Element width
p: Elementary pitch
n : Number of elements in the PA probe
Active aperture: A = n × p
Precise active aperture: A = (n - 1)× p + w



2D Probe parameters

Px: Primary pitch
Py: Secondary pitch
IEx: Primary element spacing
IEy: Secondary element spacing
Lx: Primary aperture
Ly: Secondary aperture

Probe Model Illustration: 10 L 64 - 0.6 x 7 - DP3 - U - 110 - 2.5 - T1

10	L	64	0.6	7	DP3	U	110	2.5	T1
Frequency	Array type	No. elements	Pitch	Elevation	Probe type	Cable jacket type	Cable capacitance	Cable length	Connector type

Wedge Model Illustration: SDP3 - N 55 S - IHC - AOD 203.2 (HT)

SDP3	N	55	S	IHC	AOD	203.2	(HT)
Wedge type	Mounting method	Refraction angle	Wave type	Auxiliary use	Curvature type	Tube diameter	High temperature

Probe Model Illustration

Frequency	1= 1MHz 2.5= 2.5MHz 5= 5MHz 7.5= 7.5MHz 10= 10MHz 20= 20Mhz
Array Type	L(Linear) V(Convex) C(Concave) M(Matrix) A(Annular) S(Special)
No. Elements	64= 64 Elements
Pitch	0.6= 0.6mm
Elevation	7= 7mm
Probe Type	DP3= DP3 Series
Cable Jacket Type	U= PU (Low smoke halogen-free)
Cable Capacitance	110= 110pf/m 50= 50pf/m
Cable Length	2.5= 2.5m
Connector Type	T1: QLC-260P P1: I-PEX 30056 H1: Hypertronics D1: DL-156P D2: DL-260P D3: DL-96P M1: MOLEX 78P J1: D38999/26FF35SN C1: CONEC 78PIN

Wedge Model Illustration

Wedge Type	Casing type matched to the wedge XX
Mounting Method	Angle between primary axis of probe and wedge N= Normal L= Lateral
Refraction Angle	0= 0° 45= 45° 55= 55°
Wave Type	S= Share Wave L= Longitudinal Wave
IHC	I= Irrigation H= Scanner yoke attachment points C= Adjustable carbide wear pins
Curvature Type	AOD= Axial outside diameter (circumferential scan) AID= Axial inner diameter (circumferential scan) COD= Circumferential outside diameter (axial scan) CID= Circumferential inner diameter (axial scan) SOD= Sphere outside diameter SID= Sphere inner diameter
Tube Diameter (HT)	203.2= 203.2mm High temperature wedge

Custom Probe Description

We have a professional R&D technical team and a world-class ultrasonic transducer production line. We can customize transducers according to customer requirements. To develop self-defined transducers for customers, we need to know:

1. Application scenarios, how to use existing probes
2. Probe's frequency, number of array elements, array element spacing, array element length, array configuration, probe type
3. Requirements such as size restrictions
4. Cable length and environmental requirements
5. Connector type and wire sequence requirements

Linear Array Series

Features

- Conventional array probe, standard series for phased array instrument
- Applicable to most conventional scenarios

DP1 DP4 DP5 DP6 DP2 DP3

Specifications and Dimensions

Model	Frequency (MHZ)	Elements	Pitch (mm)	Active Aperture (mm)	Elevation (mm)	Casing Dimensions			Case Type
						Long (L)	Width (W)	Height (H)	
						mm	mm	mm	
5L32-0.3x10	5	32	0.3	9.6	10	13.4	28.5	20	DP1
5L16-0.6x10	5	16	0.6	9.6	10				
5L32-0.6x10	5	32	0.6	19.2	10	23	28.5	23	DP2
5L64-0.6x10	5	64	0.6	38.4	10	42.5	28.5	23	DP3
2.25L32-0.75x24	2.25	32	0.75	24	24	29.5	30.5	25	DP4
5L64-1.0x10	5	64	1	64	10	70	28.5	23	DP5
5L128-1.0x10	5	128	1	128	10	135	29.5	30	DP6
5L32-1.0x10	5	32	1	32	10	36	28.5	23	DP28
10L16-0.31x5	10	16	0.31	4.96	5	8	8	18	DP30
5L32-0.8x10	5	32	0.8	25.6	10	29.5	28.5	23	DP31

Laterally Focused Array Series

Features

- The element is bent in the length direction to form focused beam on secondary axis
- Can be used for automatic / semi-automatic scanning of pipes with diameter of 20mm-115mm in combination with Doppler scanner

Specifications and Dimensions

Model	Frequency (MHZ)	Elements	Pitch (mm)	Active Aperture (mm)	Elevation (mm)	Casing Dimensions			Case Type
						Long (L)	Width (W)	Height (H)	
						mm	mm	mm	
7.5S64-0.6x10	7.5	64	0.6	38.4	10	42.5	28.5	24.44	DP7
15S64-0.6x10	15	64	0.6	38.4	10				
7.5S32-0.25x10	7.5	32	0.25	8	10	24.64	22	10	DP8
7.5S16-0.5x10	7.5	16	0.5	8	10				
2.5S16-0.5x10	2.5	16	0.5	8	10	25	22	14	DP9
5S32-0.6x10	5	32	0.6	19.2	10	23	28.5	23	DP29

Immersion Series

Features

- Excellent waterproof performance within 1m underwater, acoustic impedance matches well with water
- Easy coupling to multiple surfaces
- Corrosion resistant stainless steel housing
- Combined with automatic system for online detection

Specifications and Dimensions

Model	Frequency (MHZ)	Elements	Pitch (mm)	Active Aperture (mm)	Elevation (mm)	Casing Dimensions			Case Type
						Long (L)	Width (W)	Height (H)	
						mm	mm	mm	
7.5L64-1.0x7	7.5	64	1	64	7	75	19	30	DP18
20L64-0.4x5	20	64	0.4	25.6	5	32	11	20	DP19
5L128-0.8x10	5	128	0.8	102.4	10	114	22	30	DP20
1L64-1.5x22	1	64	1.5	96	22	116	58	30	DP21

DLA/DMA Series

Features

- The probe is designed in a pulse and receive mode, which greatly optimizes the surface resolution of the workpiece to be tested and has a very small surface blind area
- Compared with conventional dual-crystal probe, it has larger coverage, better imaging effect and better signal-to-noise ratio

Specifications and Dimensions

Model	Frequency (MHZ)	Elements	Pitch Px(mm)	Pitch Py(mm)	Active Aperture Lx(mm)	Active Aperture Ly(mm)	Casing Dimensions			Case Type
							Long (L)	Width (W)	Height (H)	
							mm	mm	mm	
2.25DM7x4-2.71x3.0	2.25	56	2.71	3	18.97	12	33.8	16	20	DP10
4DM16x2-1.0x3.0	4	64	1	3	16	6	28.5	10.9	20	DP11
5DL16-0.75x5	5	32	0.75	/	12	5	24	23.6	20	DP12
2.25DL32-0.6x12	2.25	64	0.6	/	19.2	12	33.8	17	25	DP13
4DL32-1.0x10	4	64	1	/	32	10	46	16	20	DP14

Water Bag Probe Series

Features

- When using a water bag wedge, there is no transverse wave or multiple wave impact compared to conventional wedges
- It has a replaceable flexible coupling surface that is suitable for coupling on different curved surfaces, and the detection process will not cause damage to the surface of the workpiece
- The clutter absorption has been optimized, interference has been reduced, and the signal-to-noise ratio has been improved

Specifications and Dimensions

Model	Frequency (MHZ)	Elements	Pitch (mm)	Active Aperture (mm)	Elevation (mm)	Casing Dimensions			Case Type
						Long (L)	Width (W)	Height (H)	
						mm	mm	mm	
4L128-0.8×10	4	128	0.8	102.4	10	120	36	25	WD83
5L128-0.6×10	5	128	0.6	76.8	10	94	36	25	WD94

Bolt Probe Series

Features

- Suitable for bolt defect detection in different fields such as bridges, high-speed rail, wind power, etc.
- Can perform in-service testing on working state bolts without disassembling
- High efficiency: Whole bolt defect detection can be completed by a single coupling
- Bolt detection range: M20-M100

Specifications and Dimensions

Model	Frequency (MHZ)	Elements	Pitch (mm)	Inner Diameter (mm)	Outer Diameter (mm)	Bolt Diameter (mm)	Casing Dimensions		Case Type
							Diameter (ϕ)	Height (H)	
							mm	mm	
5S64(ϕ29-ϕ18)	5	64	0.2	18	29	M36	35	25	DP17

Matrix Array Series

Features

- Three dimensional imaging
- Sound beam can be deflected in each direction
- Smaller spatial focus, more concentrated energy and better signal-to-noise ratio

Specifications and Dimensions

Model	Frequency (MHZ)	Elements	Pitch Px(mm)	Pitch Py(mm)	Active Aperture Lx(mm)	Active Aperture Lx(mm)	Casing Dimensions			Case Type
							Long (L)	Width (W)	Height (H)	
							mm	mm	mm	
5M8x8-1.0x1.0	5	64	1	1	8	8	21	13	28	DP15

Wheel Series

Features

- With water storage coupling system, good coupling effect
- Very low attenuation tire material
- Optional with angle adjustment block, can obtain incident angle of 0 ° - 20 °
- It can match automatic scanning device, which is suitable for detection of large-area flat or micro curved surface

Specifications and Dimensions

Model	Frequency (MHZ)	Elements	Pitch (mm)	Active Aperture (mm)	Elevation (mm)	Casing Dimensions			Case Type
						Long (L)	Width (W)	Height (H)	
						mm	mm	mm	
5L64-0.8x6.4	5	64	0.8	51.2	6.4	128	25	25	E96
10L64-0.8x6.4	10	64	0.8	51.2	6.4				

Wedge Integrated Series

Features

- Permanent fixation of elements and wedge
- Built-in wedge or delay line. Smaller size, convenient to use in a narrow space
- With its own wedge, direct angle scanning can be carried out

Specifications and Dimensions

Model	Frequency (MHZ)	Elements	Pitch (mm)	Wedge Angle (°)	Active Aperture (mm)	Elevation (mm)	Casing Dimensions			Case Type
							Long (L)	Width (W)	Height (H)	
							mm	mm	mm	
5L12-0.5x6	5	12	0.5	36	6	6	24.87	13	10.35	DP16

Concave Series

Features

- Excellent waterproof performance within 1m underwater, acoustic impedance matches well with water
- Especially suitable for automatic on-line detection
- Automatic / semi-automatic detection of pipeline corrosion and thickness measurement with Doppler scanner

Specifications and Dimensions

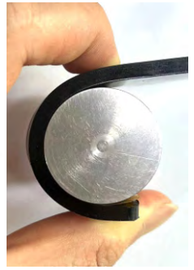
Model	Frequency (MHZ)	Elements	Pitch (mm)	Active Aperture (mm)	Radius R(mm)	Elevation (mm)	Casing Dimensions			Case Type
							Long (L)	Width (W)	Height (H)	
							mm	mm	mm	
7.5C32-0.5x10	7.5	32	0.5	16	11	10	28	30	25	DP23
5C128-0.95x12	5	128	0.95	121.6	50	12	120	107	23	DP24

Flexible Array Series

Features

- The primary direction of the probe can be bent with surface shape of the workpiece, the curvature is variable with a minimum bending radius 30mm
- With a minimum thickness of 3mm, the probe can enter the narrow space for detection
- Suilable for corrosion / thickness measurement of pipes and bars combined with Doppler scanners

DP26



Specifications and Dimensions

Model	Frequency (MHZ)	Elements	Pitch (mm)	Active Aperture (mm)	Elevation (mm)	Casing Dimensions			Case Type
						Long (L)	Width (W)	Height (H)	
						mm	mm	mm	
7.5S64-0.5x10	7.5	64	0.5	32	10	80	19	4	DP26
7.5S64-1.0x10	7.5	64	1	64	10	150	29	4	DP27

High Temperature Series

Features

- The overall temperature resistance of the probe, combined with the high-temperature resistant wedge, it can continuously detect the workpiece with the surface temperature of 150 ℃
- It can be matched with 0° and angled high temperature wedge

DP5

DP28

Specifications and Dimensions

Model	Frequency (MHZ)	Elements	Pitch (mm)	Active Aperture (mm)	Elevation (mm)	Casing Dimensions			Case Type
						Long (L)	Width (W)	Height (H)	
						mm	mm	mm	
5L64-1.0x10	5	64	1	64	10	70	28.5	23	DP5
5L32-1.0x10	5	32	1	32	10	36	28.5	23	DP28

Other Special Probes

According to the needs of on-site detection, we can develop special customized probes for customers. Some customized probes are listed below. Doppler is your best choice for solutions for difficult scenes.

Multi circular sector probe

Self-focusing concave array probe

Replaceable soft protective film probe

Annular taper probe

Multi connector probe

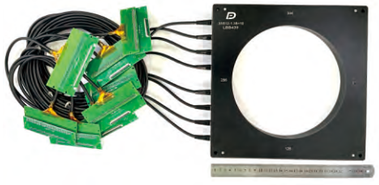
Near wall probe

Inner-through annular self-focusing convex array probe

Inner-through annular convex array probe

Inner-through annular convex matrix probe

Integrated self-focusing concave probe



Circular array probe

Annular hollow focusing probe

Options

- The corrugated sleeve can protect the cable from corrosion and external impact
- Nylon mesh sleeve can increase protection while maintaining the flexibility of cable
- Metal corrugated tube can enhance shielding and anti-interference on the basis of protecting cable lines from corrosion and impact resistance

- High sound transmission soft protective film can be directly pasted on the surface of phased array probe，so that the 0 ° wedge is not needed for detection, the interference caused by multiple echoes on the lower surface of the wedge is effectively eliminated, and the detection cost is effectively reduced

Instructions for Phased Array Probe

- A layer of blue protective film is pasted on the probe surface to avoid scratches during transportation. Please tear off the protective film before use, otherwise it will affect the performance of the probe
- Do not forcibly plug and unplug the connector to avoid pin damage
- Use the probe carefully to avoid impact by external force
- When the probe is not in use, it shall be sealed and stored, such as in the original suitcase, so as not to be affected by environment
- The application scenarios of different types of probes are determined according to the specific application standards. The solutions of different scenarios are welcome to inquire. Website: www.cndoppler.com, Email: cndoppler@cndoppler.com

Warranty Description

The warranty period of Doppler phased array probe is generally one year, and the warranty scope does not include damage or wear caused by misuse or accident, such as:

- Incorrect assembly method
- Incorrect use, including but not limited to the impact of the probe surface, unauthorized disassembly, etc.
- For use in an environment outside the allowable range, the storage temperature range of the probe is generally - 30 ° C to 50 ° C, and the service temperature range is - 20 ° C to 50 ° C
- The excitation voltage is too large. Generally, the maximum repetition frequency is 10 KHz, and the continuous operation is no more than 5 KHz 100V (the details shall be subject to the probe test report)
- Use of substandard couplant

General Index of Phased Array Probe

Doppler has strict quality standards for products, and the general indicators of products are as follows (according to JB / T 11731-2013 test standard):

Sensitivity conformity	±2dB
Sensitivity difference between batches	±2dB
Service temperature	-20℃ to 50℃
Storage temperature	-30℃ to 50℃

Wedges

Features

- Generally, it is used for SW or LW detection with an angle between 30 ° and 70 °, providing refraction angles in standard steel such as 0 °, 45 °, 55 ° and 60 °
- Composite anti-wear screws can be used on easily scratched surfaces
- High temperature wedge is used in high temperature environment and can withstand high temperature of 260 ℃
- Wedge shape and parameters can be customized according to customer requirements

Anti Wear Wedge

Water Wedge

Dual Array Wedge

Angle Wedge

0° Wedge

High Temperature Wedge

Specifications and Dimensions

Wedge Type	Wedge Model	Probe Type	Refraction Angle	Wedge Dimensions			Wedge Angle
				Long(L)	Width(W)	Height(H)	
				mm	mm	mm	
0°Wedge	SDP3-N0L-H	DP3	0°LW	48	30	20	0°
Angle Wedge	SDP2-N55S-IH	DP2	55°SW	41	30	26.64	36°
Anti Wear Wedge	SDP2-N55S-IHC-AOD326	DP2	55°SW	41	30	27.29	36°(ϕ326mm)
Dual array Wedge	SDP11-N55L-IHC(TR，roofangle3.7°，F=15)	DP11	55°LW	30	40	14.96	18.7°
High temperature Wedge	SDP28-N55S-IH(HT)	DP28	55°SW	64	44	34	39.5°
Water Wedge	SDP8-N65L-IH-AOD270	DP8	65°LW	23.96	22	13.12	36°(ϕ270mm)

Connectors

Doppler provides compatible connectors for all kinds of Phased Array Probes in the market, such as T1, P1, J1, H1, D1, D2, D3, M1, etc.

T1: QLC-260P

P1: I-PEX 30056

J1: D38999/26FF35SN

D1: DL-156P

D2：DL-260P

H1: Hypertronics

Adapters & Extension Cables

The Doppler phased array ultrasound probe connector adapter box can be arbitrarily switched between T1, P1, J1, H1, D1, D2, D3, M1 and other interfaces, and can be customized according to customer requirements.

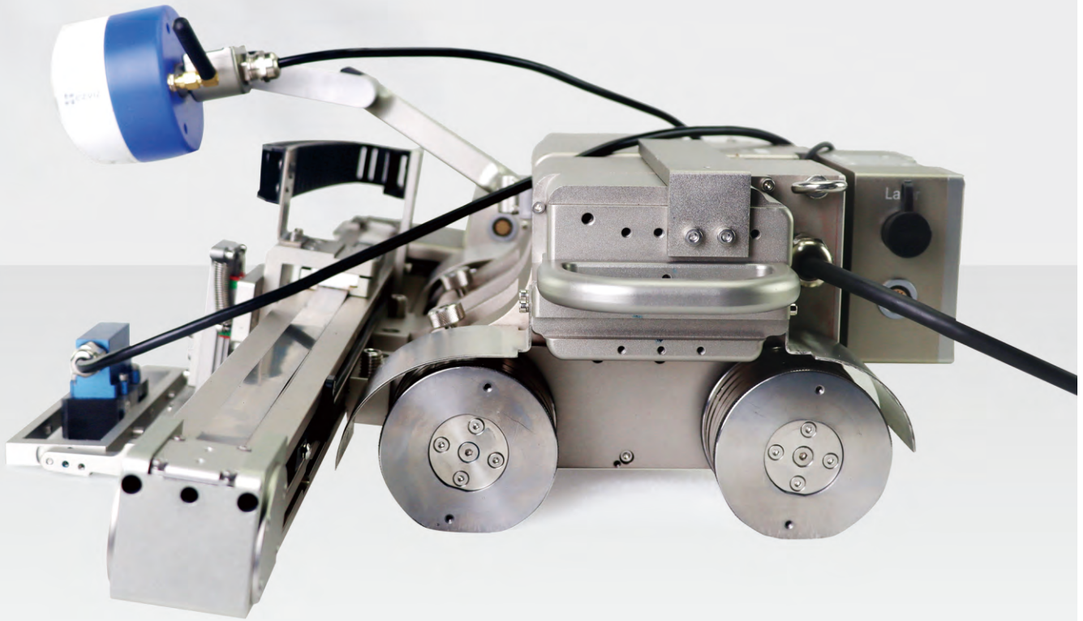
T1(Male)-J1(Female)
J1(Probe)-T1(Instrument)

T1(Male)-P1(Female)
P1(Probe)-T1(Instrument)

T1(Male)-H1(Female)
H1(Probe)-T1(Instrument)

P1(Male)-T1(Female)
Integrated Adapter Box

Scanners



SCANNERS

Product

FC Series

FC-01

PA+TOFD Scanner

Doppler FC-01 type PA+TOFD welds scanner is suitable for pipe butt weld inspection with diameter over 6"(150mm) by axial direction, and flat butt weld inspection. Combine with four probe clamps & one wheel type encoder. Free collocation of PA probes & TOFD probes by inspection needs.

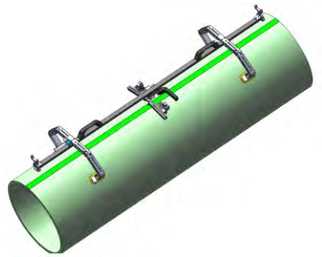
Parameter	
Range	Circumferential: Φ6"(150mm)~flat
Dimensions	426*110*125mm
Encoder Step	48steps/mm
IP Level	IP67
Operating Temp	-10℃~50℃

FC-26

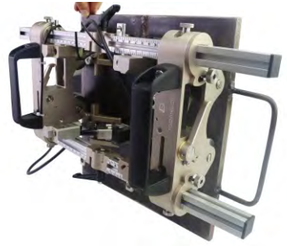
Longitudinal Weld Scanner

Features

- FC-26 scanner can be used for stainless steel pipe, aluminum pipe, aluminum plate and steel plate,etc. The scanner with four vacuum suckers, adsorption on workpiece via dragging handle to move probe, simple and stable on operation
- The pipe diameter can be customized according to requirements, and the applicable range of pipe diameter is 500mm to flat
- The length can be customized, up to 1500mm
- Different clamping tools can be customized according to selected probes

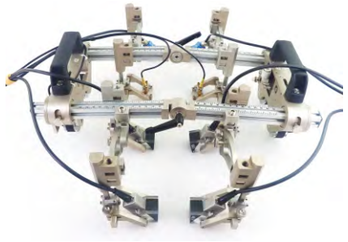


FC-02、FC-02+



FC-02

PA/TOFD (FC02) scanner support curvature adjustment, applicable to detection for pipe and plate in direction of circumferential and axial. Pressure regulator ensures wedge closely attach to work piece for an effective detection. By equipped with reliable brake device, the scanner can firmly stay at any position. By simple operation, most of scanning functions can be achieved manually. Scanner can be assembled with 4 probes according to detection requirement (PA / UT), convenient assembly and disassembly.



FC-02+

Features: FC-02+ scanner is based on the model: FC-02, with extra 1~4 probe clamps, allows to clamp maximum 8 Phased Array or TOFD probes, which is suitable for multi-groups of Phased Array or TOFD inspection requirements.

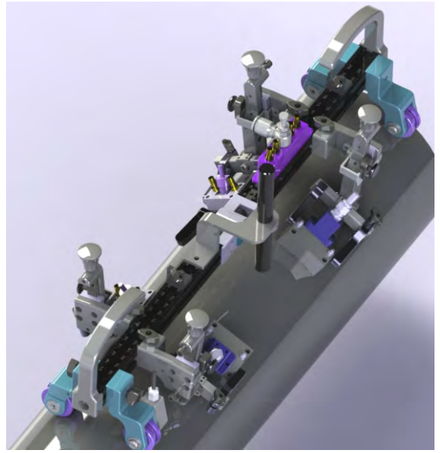
Standard Kits

Scope of application: Same as FC-02
Standard configuration: Added four variable angle probe

Parameter	FC-02Parameter	FC-02+Parameter
Range	Circumferential：Φ6"(150mm)~flat Axial：Φ17"(425mm)~flat	Circumferential: Φ6"(150mm)~flat Axial: Φ17"(425mm)~flat
Dimensions	446*182*128mm	446*476*139mm
Encoder Step	48 steps/mm	48 steps/mm
IP Level	IP 65	IP 67
Operating Temp	-10℃~50℃	-10℃~50℃
Clamp Width of Wedge	32~48mm	32~48mm

FC-29

The FC29 scanner supports the simultaneous installation of one group of TOFD probes and two groups of PA probes. The scanner body is composed of four individually movable magnetic wheels and a clamp with springs, and is equipped with a rechargeable laser to indicate the center position of the probe, avoiding misalignment during scanning.



Features

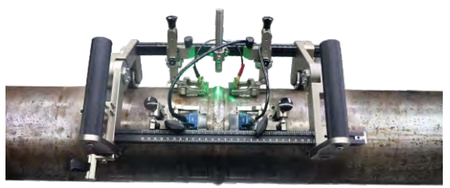
- Scope of application: Pipe circumferential weld workpiece with a diameter greater than 150mm and flat butt weld workpiece
- The standard length of the scanner is 476mm, and the center distance can reach 220mm when using TOFD probes; When space is required, the total length can be customized
- The clamping frame can hold wedges with a width of 22-44mm
- Four magnetic wheels can attach the scanner to the ferromagnetic detection surface
- The encoder is IP67 and has a resolution of 22.1steps/mm

FC-30

The FC30 scanner is one of the best manual scanners for single axis coding detection of pipeline circumferential welds. The standard configuration of the scanner can support clamping four probes. The mounted probe can be either phased array probes or TOFD probes . The probe holder is optimized to operate without tools, saving time when replacing and adjusting probes and wedges.

Features

- The end face gear type aluminum frame can maintain overall rigidity and stability, and can also improve the coupling effect between the probe and the pipeline in pipeline circumferential weld detection
- The magnetic wheel is glued for smoother use
- The coupling agent supply joint is integrated with the scanning frame, which saves more space
- Scope of application: Pipeline workpieces with a diameter greater than 114mm
- The total width of the scanning frame is 450mm, and different lengths of crossbars can be customized according to needs



MOS Series

MOS-01

Mouse Type Girth Weld Scanner

Doppler MOS-01 mouse type scanner is designed for recordable inspection of circumferential above Φ100mm pipe girth welds and plate butt welds by using PA probe.

Features

- Uses the imitation mouse ergonomics design, the operation is convenient and comfortable
- Encoder hidden in the "mouse" can prevent the encoder from slipping, resulting in data loss, but also enhance the life of the encoder
- "Mouse" is equipped with four strong magnetic wheels and torsion spring, which can make the phased array probe and the workpiece surface closely adhere to ensure the coupling effect
- It can change the clamping direction of the probe at 90 degrees, compatible with "left and right scan" and "front and back scan"

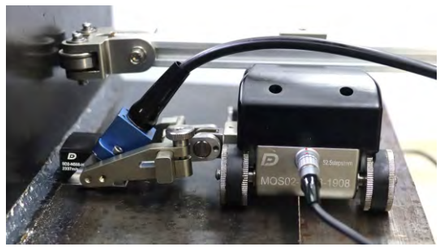
MOS-02

Mouse Type TKY Conner Weld Scanner

Doppler MOS-02 mouse type scanner is designed for recordable inspection of TKY conner welds by using single Phased Array probe. Wedge width range: 22mm~42mm.

Features

- Using mouse type ergonomic design, smart and comfort to operate
- Conceal Design of Encoder, more beneficial to prevent data loss of encoder track-slipping, and extend the lifetime of encoder
- MOS-02 includes 4 strong magnetic wheels, combines pressure springs to make sure tightly closefit between Phased Array probe and workpiece surface, and make sure sufficient coupling effects
- The probe clamping is 90 ° direction adjustable, to perform lateral scanning and vertical scanning



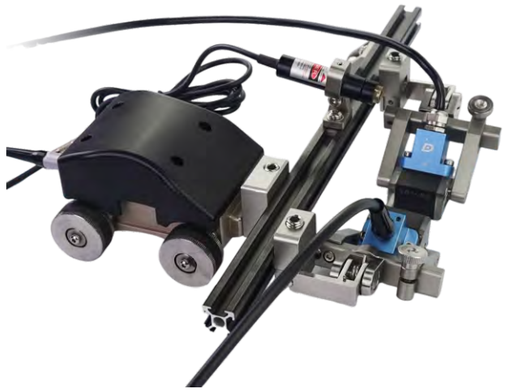
MOS-03

Mouse Type PA/TOFD Dual Probes Scanner

Doppler MOS-03 mouse type scanner is designed for bilateral simultaneous inspection of plate butt welds by using dual Phased Array probes, or single group of TOFD inspection. Equipped with a laser guide, to ensure when traveling along the weld center-line during inspection. Wedge width range: 22mm~42mm.

Parameter

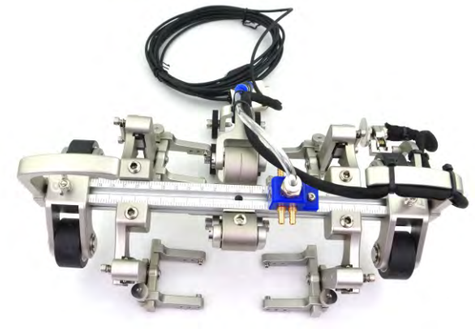
- Scope of application: Plate butt welds
- Scanner size: 350*182*43mm
- Encoder step: 38 steps/mm
- Ingress protection ratting: IP67



MOS-04
Chain Scanner for Large Pipelines

MOS-04 is suitable for circumferential weld detection of large diameter pipe. The scanner is easy to assemble and operate, and can be quickly disassembled. MOS-04 scanner can clamp two PA + two TOFD probes simultaneously for weld scanning. It is suitable for circumferential weld scanning of large pipes with diameter ranging from 8"(203mm) ~ 48"(1219mm). The scanner with manual or automatical operation options. Wedge width range: 22mm-42mm.

Parameter	
Girth Range	Φ203mm~Φ1219mm
IP Level	IP65
Storage Temperature	-20℃~ +60℃
Operating Temperature	-10℃~ +50℃



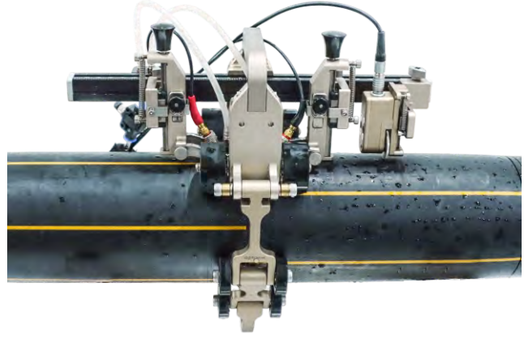
MOS04 -DD

MOS-05
PE Pipe Weld Scanner

The MOS05 scanner is mainly used for the detection of PE pipe butt joints. The main body is composed of detachable chains, clamping frames, and encoders. The scanner is divided into two types: hot melt and electric melt, which are respectively suitable for the detection of PE pipe hot melt butt joints and electric melt butt joints.

Features

- Scope of application: PE pipe with a diameter greater than 60mm, can be matched with different number of chains according to requirements
- It is necessary to first determine the model of the probe and wedge according to the scanning process, and then determine the size of the clamping frame
- The screw locking mechanism can make the scanner tightly adhere to the surface of the workpiece, ensuring good probe coupling
- Encoder protection level IP67, resolution 23.1 steps/mm



Inspection of PE pipe hot melt butt joint

Inspection of PE pipe electric fusion butt joint

MOS-07

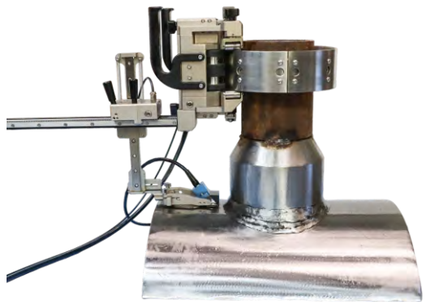
Pipe Seat Weld Scanner

MOS07-DD Automatic

- Suitable for welding seam detection of nozzle at 90°
- Including angle coding and position coding dual-axis encoder, can accurately locate the position of probe relative to the weld by sofeware
- With the phased array instrument software, the cross-sectional diagram of each scanning position can be displayed in real time to assist in the determination of defects
- The small magnetic & automatic crawler drives the scanner to scan in the axial direction of the branch pipe, controlled by the handle button, and easy to operate
- Detection scope: ϕ100mm ≤ outer diameter of branch pipe ≤ ϕ300mm, outer diameter of main pipe ≥ ϕ600mm

MOS07 Manual

- Suitable for welding seam detection of nozzle at 90°
- Including angle coding and position coding dual-axis encoder, can accurately locate the position of probe relative to the weld
- The chain link number of the scanner can be adjusted according to the outer diameter of branch pipe
- With the computer, the cross-sectional diagram of each scanning position can be displayed in real time to assist in the determination of defects
- Detection scope: ϕ100mm ≤ outer diameter of branch pipe ≤ ϕ300mm, outer diameter of main pipe ≥ ϕ600mm



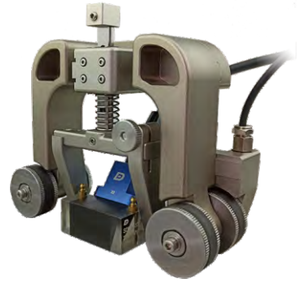
MOS07-DD

MOS07 MANUAL

MOS-20

Simple Scanner

- Used for butt welds for pipes and plates
- Used for pipeline corrosion and plate corrosion detection
- Small width, suitable for narrow space detection
- Scope of application ≥ OD150mm
- Waterproof rating: IP67

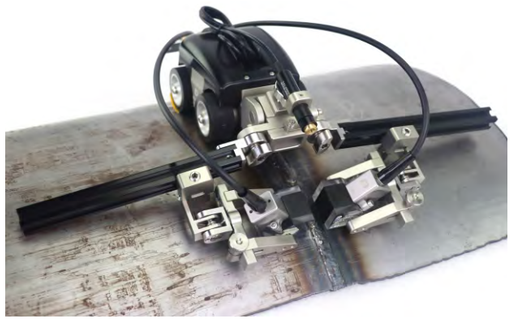


MOS-40

Dual Probes Spiral Welded Pipe Scanner (Axial or Girth Welding Compatible)

Doppler MOS-40 mouse-like dual probes scanner is mainly used to spiral welded pipe welding inspection, To perform dual PAUT probes encoded inspection or TOFD encoded inspection to Axial or Girth welding, also flat butt welding. Each probe angle is adjustable, mouse wheels are adjustable alone with the pipe size. It's compact and easy to handle.

Parameter	
Range	Axcial, Girth: OD≥Φ200mm
	Spiral Welded: OD≥Φ500mm
Dimensions	282*243*82mm
Encoder Step	32 steps/mm
IP Level	IP64
Operating Temp	-10˚C~50˚C
Wedge Width Range	22~48mm



CRS-7 / CRS-8 Tool Free Assembly

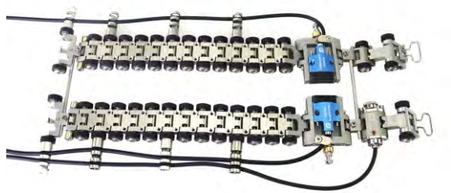
Chain Scanner for Small Pipes

Doppler CRS chain scanner is mainly used to inspect girth welding of pipes OD 0.8"(20mm) to 4.5"(114.3mm), one sided or two chains two sided are optional.

Parameter	
Range	Φ0.8"(20mm)~Φ4.5"(114.3mm)
Encoder Step	100 steps/mm
Width	55mm
Height	12mm
IP Level	IP65
Operating Temp	-10℃~50℃

*The latest quick release patented design chain link, quick change of pipe diameter with bare hands and tools

CRS-7



CRS-8

CRS-15 Narrow Chains with Quick Disassembly

Chain Scanner for Small Pipes

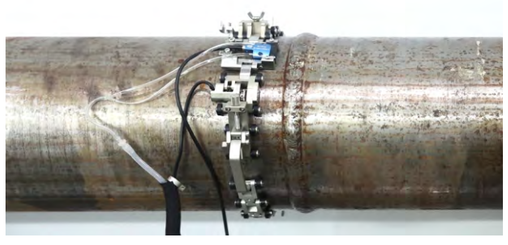
Doppler CRS-15 scanner is mainly used to pipe OD 0.8"(20mm) to 4.5"(114.3mm) girth welding PAUT. Single or twin chains optional, width of each chain is only 36mm, which could be applied to limited clearance with special probe.

Parameter	
Range	Φ0.8"(20mm)~Φ4.5"(114.3mm)
Encoder Step	100 steps/mm
Width	36mm
Height	17mm
IP Level	IP65
Operating Temp	-10℃~50℃

CRS-25

Chain Scanner

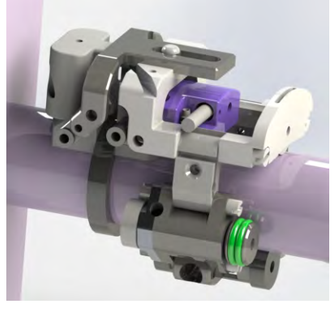
Applicable range OD50-300mm middle and small diameter circumferential butt girth weld phased array detection,can choose a single PA probe detection and two PA probe bilateral detection according to the detection requirements; chain section can be quickly disassembled and assembled, easy to operate.



CRS-34

Scanner for Small Pipes

The CRS-34 scanner is used for small diameter pipe circumferential welds inspection with the narrowest space required. Two probes can be installed, and the outgoing wires of the probes need to be customized. Both groups of probes adopt a spring preloaded structure, with good coupling effect. The minimum distance between the front edges of the wedges can be 6mm, and the maximum distance is 16mm. The scanner can be used with a wall spacing greater than 25mm, and the distance between the weld and the end face of the obstruction should be greater than 25mm.



DSC-03

Automatic Crawler

DSC Series

Specification

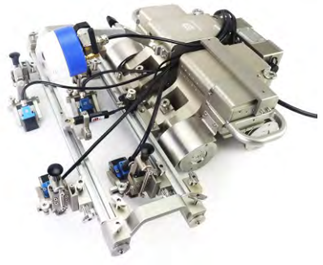
- Real-time acquisition of working environment images
- Displacement reciprocating accuracy error ≤ +/-1mm
  Speed accuracy error < 5%
- When the wall thickness of bare metal magnetic workpiece in vertical direction is more than 20 mm, it can carry 20KG
- Circumferential motion applicable range ϕ800mm ~ flat, axial motion applicable range ϕ500mm ~ flat
- Measuring the thickness of workpiece (≥ 5mm)
- Speed range： 20mm/s ~120mm/s
- Motion speed of power arm is 10 mm/s ~130 mm/s
- Motion control mode:
  Free motion model
  Displacement motion mode
  Two-axis scanning mode: raster scanning/sawtooth scanning

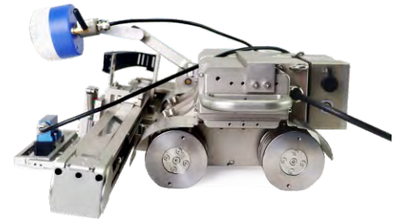
Features

- Phone WIFI + wired remote controller
- Support all orientation movements
- Multi-probe clamp modes, welds compatible
- Base material & corrosion inspections

Application

- Weld detection of large tank
- Flat plate weld detection
- Base material testing
- Corrosion detection
- Ultrasound thickness measurement





DSC-05
Scanner for Small Pipes

The DSC-05 is an advanced remote control inspection car, designed specifically for the surface of magnetic metal materials, which can firmly adhere to magnetic materials such as carbon steel. The car mainly moves along the axis of the workpiece and is equipped with various detection devices and sensors to conduct comprehensive detection operations on the workpiece. Its versatility enables it to assemble corrosion detection devices and weld detection devices to meet different detection needs.

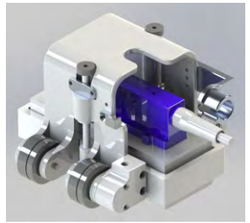
The structural design of this scanner integrates a driving vehicle body, an encoder module for precise positioning, a magnetic wheel module to ensure stable adsorption, a probe fixture module for installing detection equipment, a power supply module to provide continuous power, a camera module for visual operation, and a control module for remote control operation. These carefully designed module combinations ensure the efficiency and reliability of DSC-05 in performing complex detection tasks. Operators can command the car through remote control devices to conduct inspections in difficult to reach or dangerous environments, greatly improving work efficiency and safety. In addition, the optional modular design allows the car to quickly replace or add detection equipment according to different work scenarios and specific requirements, further enhancing its applicability and flexibility.

- The combination of DSC-05 and double-sided scanner for elbow weld makes the detection of straight pipes and elbow weld efficient and feasible. The DSC-05 remote-controlled vehicle body has excellent flexibility and can adapt to pipes with a diameter range of 60 to 190 millimeters, and move along its axis. The vehicle design supports clamping two phased array probes, providing necessary configurations for the detection of complex pipeline structures.

- The combination of DSC-05 and straight pipe corrosion scanner makes pipeline corrosion detection work more precise and efficient. This combination can drive the probe to rotate 360 degrees in all directions, thereby providing comprehensive corrosion detection for pipelines.

DSC-02
Simple Scanner

The main body of the DSC02 scanner is composed of four magnetic wheels and a clamping frame with springs. It can be installed with 128 or 64 array element linear array probes. The overall device is compact and portable, with a wide range of applications. It can be used for corrosion and weld detection of pipe workpieces with a diameter of 800mm or above, as well as base material detection of flat workpieces.



DSC-06
Corrosion Scanner

- Material or corrosion inspection for large pipe and plate
- Can use 64 or 128 elements PA probe,water filling as a wedge
- Wheel encoder to record data
- Optional magnetic wheel or rubber wheel
- Probe height adjustable

DSC-06 Scanner Parameters	
Circumferential motion	Φ127mm~ flat
Encoder IP Level	IP 65
Storage Temperature	-20℃~ +60℃
Operating Temperature	-10℃~ +50℃

DSC-11
PE Pipe Weld Scanner

The scanner is used to inspect electric fusion joint of PE pipe. The joint fully water immersed, no need remove its surface lettering, pointer and terminal. Each scanner size only for a single specification. In diameter range 30~100mm to customize scanner size and water layer height according to joint specification. This scanner is easy to be installed and operated.

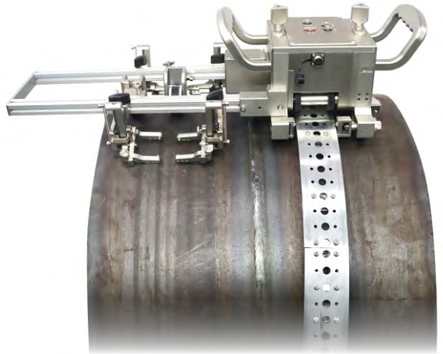
DSC-27

Guide Rail Scanner for Pipeline

Guide rail scanner for circumferential weld can realize remote control. Handle control via wire or wireless, DC 24V power supply. The guide rail design can ensure the distance between probe and weld remain constant, to realize rapid and automatic inspection for circumferential weld.

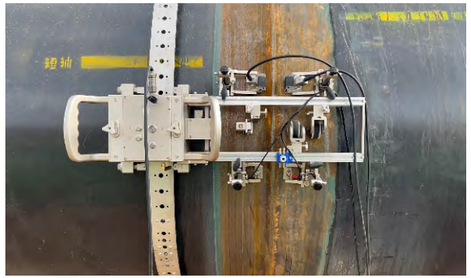
Application

- Used for regular hard pipes, run freely on rusty, residual or frozen pipes surface
- Minimum thickness of workpiece: 3mm
- Outer diameter range of pipeline: OD ≥ 430mm



Features

- Step of encoder: 24steps / mm
- Repeated positioning accuracy: ± 1mm
- Adjustable speed: 5~100 mm / sec
- Protection: NEMA 4, IP65
- Operating temperature: - 20 ° C ~ +60 ° C
- Power supply: 220V AC or 24V DC



DSC-28

Multi-functional Automatic Crawler

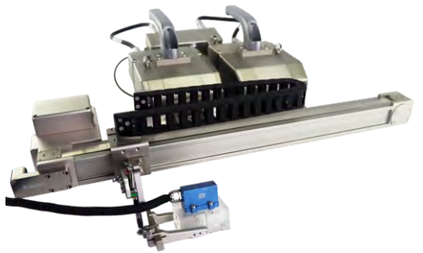
The DSC 28 multi-functional automatic crawler is a remote-controlled, magnetic wheel scanner, can run freely on ferromagnetic workpieces to realize ultrasonic detection. It is applied to large tank and pipeline weld detection, plate weld detection, material detection, corrosion detection and ultrasonic thickness measurement.

Application

- The crawler can run upside down on smooth metal wall.
  Vertically runs on wall with coating thickness less than 0.5mm.
  Horizontally runs on wall with coating thickness less than 1 mm
- Runs freely on rusty, residual or frozen pipes surface
- Minimum thickness of workpiece: 3mm
- Circumferential inner diameter range: ID ≥ 610mm
- Circumferential outer diameter range: OD150mm ~ flat
- Axial outer diameter range: OD 300mm ~flat

Features

- Step of encoder: 9.37steps/mm
- Left and right moving shaft encoder: 23.2steps/mm
- Repeated positioning accuracy: ± 1mm
- Protection: NEMA 4, IP65
- Operating temperature: - 20 ° C ~ +60 ° C
- X-axis speed: 0 ~ 120 mm / sec
  (For different loads and working conditions,
  the maximum speed will be limited)
- Power supply: 220V AC or 24V DC



FS Series

FS-04

Corrosion Scanner

- 7.5S64-1.0x10 flexible phased array probe+water jacket,small pipe corrosion detection, water kackets need to based on pipe OD, water jacket application range OD+/-3mm
- Suitable for corrosion detection of small diameter pipe OD40mm~150mm
- The scanner is equipped with encoder, and the magnetic wheel absorbs the steel pipe with stable coupling and simple operation
- Strong applicability. It only needs to change water jacket for different pipe diameter, no need to change probe

FS-05

Corrosion Scanner

- 7.5C64-1.0x10 PA concave probe + water jacket. Water jacket change according to pipe OD, application range OD+/-3mm
- Suitable for corrosion detection of small diameter pipe (OD40mm~150mm)
- The scanner is equipped with encoder, and the magnetic wheel absorbs the steel pipe with stable coupling and simple operation

FS-06

Elbow Corrosion Scanner

- Applicable pipe diameter range: elbows above OD102mm
- Scanning device with encoder, C scan imaging available
- The magnetic wheel is adsorbed on the steel pipe and the coupling is stable, simple operation
- The flexible probe has strong applicability. It only needs to replace the water jacket to detect different pipe diameters, without replacing the probe
- Waterproof registration: IP67

FC-XY02-DD

XY Dual-axis Automatic Scanner

Doppler XY dual-axis automatic scanner can be used for automatic detection of composite plate, aluminium plate and steel plate by ultrasonic phased array. The scanner uses four vacuum suckers, easy to operate, stable and reliable. Two DC motors drive scanning axis and stepping axis to do two-dimensional scanning, which can set scanning step and scanning area to realize automatic scanning quickly. 64 or 128 element probes can be selected with wedge or water jacket for base metal detection, X/Y dual-axis encoder can do two-dimensional C-scan imaging. Effective scanning area 800mm*300mm, can customize different effective scanning areas according to specific inspection needs.

Features

- Applicable for composite plate, aluminium plate and steel plate
- 64 or 128 element probes can be selected with wedge or water jacket for base metal detection
- Effective scanning area 800mm*300mm, can customize different effective scanning areas according to specific inspection needs
- Use vacuum suckers, easy to operate, stable and reliable
- Can set scanning step and scanning area to realize automatic scanning quickly
- X/Y dual-axis encoder can do two-dimensional C-scan imaging

ENC-10

Wheel Encoder

The Doppler ENC-10 wheel encoder is mainly used with single PA probe for pipe and plate welds inspection. The structure is simple and convenient, it can be directly connected to the wedge, and according to the detection process, the direction of the probe can be changed, which is capable to perform scan forward or backward on the left or right of welding.

UT Probes

CONVENTIONAL UT Probes

Doppler designed a series of standard probes, customized probes and relevant accessories, in total more than 4000 models. Probes are widely used in aerospace, nuclear power, oil and gas, mechanical manufacturing, shipping industry, railway transportation, medicals and so on, and used on a variety of projects around the world. With more than 10 years transducer design experiences and keep improving manufacturing process to ensure high performance and reliability of products. Doppler keep bringing in talents, investing in R&D, testing and production facilities. From ultrasonic field distribution to transducer stack up design, Doppler keep innovating and progressing to bring better products and services to clients.
This mannul collects most standardized transducer products, you can find almost all models you need. For customized products or unsolving difficult subjects, our application and transducer especialists are very pleased to help to find the viable solutions.

Instruction of Conventional UT Probes

- Ultrasonic Probe is the most essential part of ultrasonic detection systems, to choose the right probe can ensure a smooth detection work and accuracy of test results
- Doppler provides three different kinds of performance probes, with unique application and performance characteristics
- Below shows transmitter, configuration, cable, crystal frequency, crystal size etc., characteristics and applications of three types of probes

PL-Universal Series

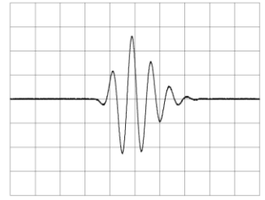
Applications

- General inspection environments

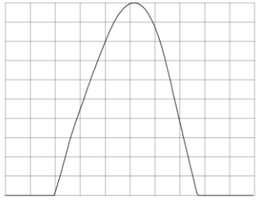
Features

- With appropriate sensitivity and resolution
- Longer duration of wave, typically at 3~5 cycles
- Lower bandwidth, typically at 30~50%

回波信号/Echo Signal



频谱/Spectrum



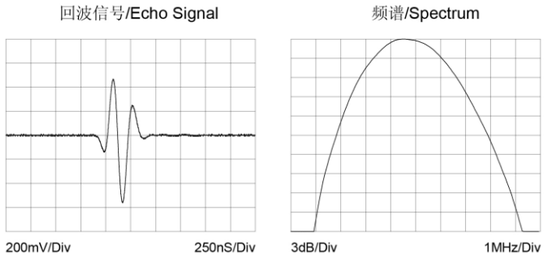
PH-Short Pulsing Series

Applications

- Ideal for precise thickness measurement, near surface detection environments

Features

- Excellent vertical and horizontal resolutions
- Tiny blind spot width of initial pulse
- Less Sensitivity than PL and C Series
- Shorter duration of wave, typically at 1.5~2 cycles
- Higher Bandwidth, typically at 80~110%



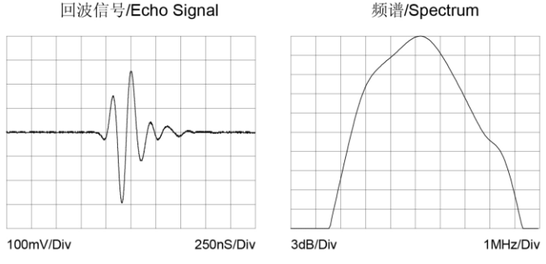
C-Composite Series

Applications

- High penetration power and high SNR for coarse-grained, fiber-reinforced composite materials

Features

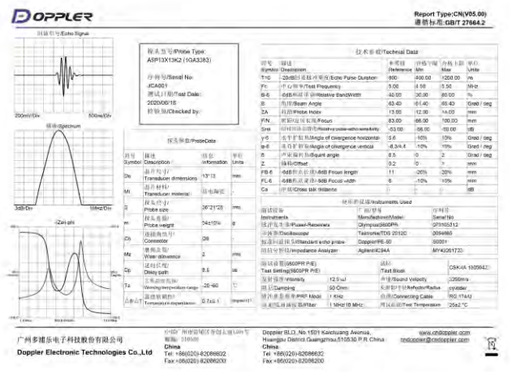
- 1-3 piezo - composite crystal
- Higher sensitivity to PL and PH series
- Shorter duration of wave, typically at 2~2.5 cycles
- Higher Bandwidth, typically at 70~110%
- Low acoustic impedance composites enable probes better matching with low acoustic impedance medium such as water, plastics, etc.



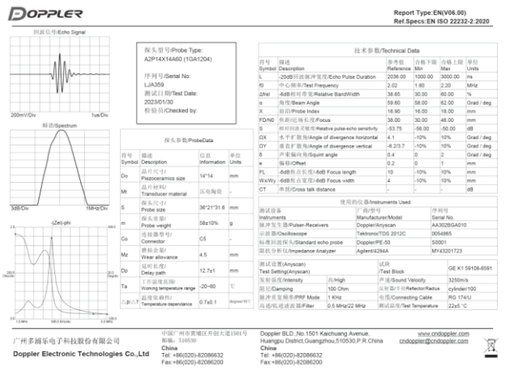
Probe Data Sheet

Each transducer sold by DOPPLER has undergone strict testing and certification with reliable detection equipment and stable testing environment. The data sheet can truly and effectively reflect the performance of the transducer, which contains basic parameters that need to be paid attention to in daily use, as well as a large number of characteristic parameters. It helps users to make comparing and researching of the probes characteristics.

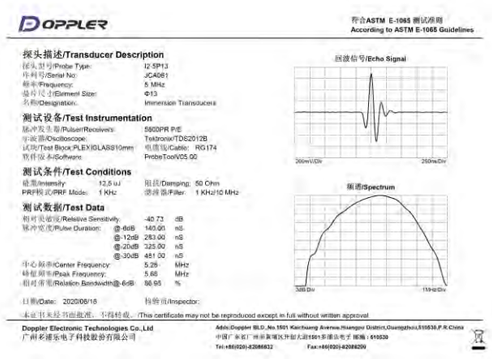
Data Type	Description
CN	Complied to Chinese GB/T 27664.2 testing standards
EN	Complied to European EN ISO 22232-2 testing standards
AT	Complied to North America ASTM E-1065 testing standards
CS	Any probe other than "CN", "EN" and "AT", providing echo and spectrum diagram, center frequency, pulse width, bandwidth, sensitivity and other important data
LFA	For twin crystal longitudinal wave angle probes, analysis relationship between angles, focal depth and focal points, center frequency, bandwidth, sensitivity and relevant important data
DGS	Provide probe DGS curve (to be ordered separately) to describe the relationship between distance, gain and equivalent size for regular reflector



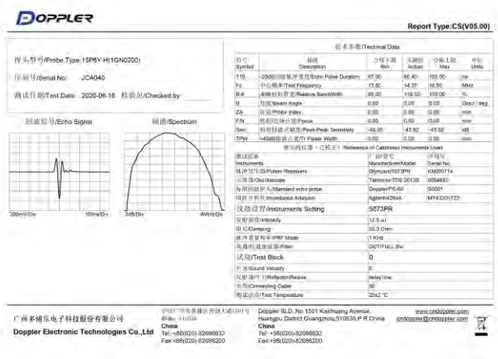
CN



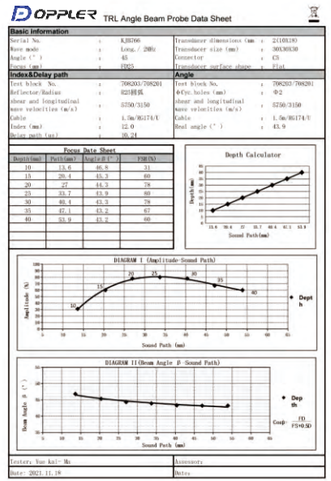
EN



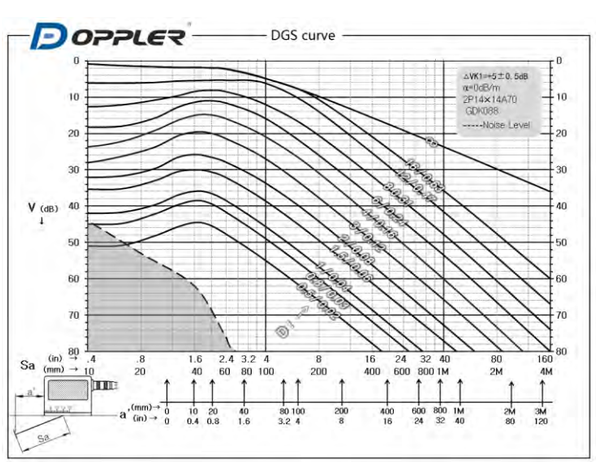
AT



CS



LFA



DGS

Contact - Wear Resistant Probes

A single crystal transducer, sound wave vertical incidence and direct contact.

Features

- Wear resistant stainless steel housing
- Wear resistant front end protective layer, long service life
- Good match acoustic impedance with most metals
- 3 types of performance to meet the cast majority of testing requirements:

  "PL" Universal Series, "PH" Short Pulsing Series, "C" Composite Series

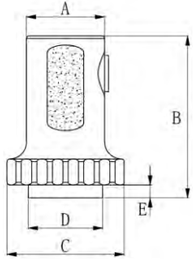
Applications

- Simple structure of metals
- Large plates, bars, forgings, metals and non-metals
- Small tanks, pipes, castings, bars
- Sandwich and laminated structures
- Materials velocity and characteristics
- Coarse grain or high attenuation materials

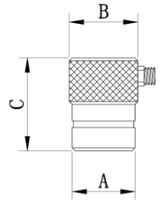
European Standard - N2

- Microdot(L5), Lemo 00(C5), and Lemo 01(C9) side mounting connectors, for above ϕ5 can be customized as top mounting connector

Probe Dimensions												
Nominal Element Size		A		B		C		D		E		Connector Direction
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
10	0.375	20.0	0.79	42.5	1.67	24.0	0.94	14.0	0.55	2.0	0.08	Lemo-00 / Side Mounting
24	0.94	30.0	1.18	59.5	2.34	45.0	1.77	29.0	1.14	2.5	0.10	Lemo-1 / Side Mounting



Housing Dimensions
(10/24mm Crystal Diameter)



Probe Dimensions								
Nominal Element Size		A		B		C		Connector Direction
mm	in	mm	in	mm	in	mm	in	
5	0.20	9.0	0.35	10.0	0.39	15.0	0.59	Microdot / Side Mounting

Housing Dimensions
(5mm Crystal Diameter)

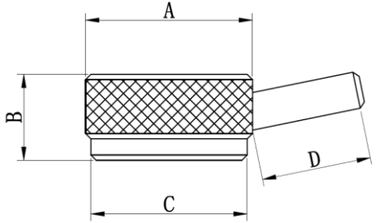
Probe Specification				
Frequency	Nominal Element Size		Model	
MHz	mm	in	PL	PH
1	10	0.375	N2-1P10	N2-1P10-H
	24	0.94	N2-1P24	N2-1P24-H
2	10	0.375	N2-2P10	N2-2P10-H
	24	0.94	N2-2P24	N2-2P24-H
4	10	0.375	N2-4P10	N2-4P10-H
	24	0.94	N2-4P24	N2-4P24-H
5	5	0.20	N2-5P5	N2-5P5-H
	10	0.375	N2-5P10	N2-5P10-H
10	5	0.20	/	N2-10P5-H

European Standard - N3

- Low height probes, suitable for narrow and limited detection environments
- Lemo 00 (C5) side mounting connector, with handle bar

Probe Dimensions									
Nominal Element Size		A		B		C		D	
mm	in	mm	in	mm	in	mm	in	mm	in
10	0.38	19	0.75	16	0.63	17	0.67	20	0.79
20	0.79	29	1.14	16	0.63	27	1.06	20	0.79

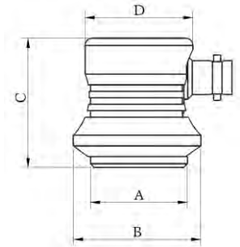
Probe Specification				
Frequency	Nominal Element Size		Model	
MHZ	mm	in	PL	PH
1	10	0.38	N3-1P10	N3-1P10-H
2	10	0.38	N3-2P10	N3-2P10-H
	20	0.79	N3-2P20	N3-2P20-H
4	10	0.38	N3-4P10	N3-4P10-H
	20	0.79	N3-4P20	N3-4P20-H
5	10	0.38	N3-5P10	N3-5P10-H
	20	0.79	N3-5P20	N3-5P20-H
10	10	0.38	/	N3-10P10-H



North America Standard - N4

- Large crystal diameter to ensure high sensitivity of probe, and wider coverage area of detection
- BNC(Q9) side mounting connector, can be customized as top mounting connector

Probe Dimensions									
Nominal Element Size		A		B		C		D	
mm	in	mm	in	mm	in	mm	in	mm	in
13	0.50	20	0.79	29.5	1.16	36	1.42	23	0.91
19	0.75	28	1.10	38	1.48	36	1.42	31	1.22
25	1.00	32	1.26	41.5	1.63	36	1.42	35	1.38
29	1.125	38	1.50	41.5	1.63	36	1.42	41	1.61



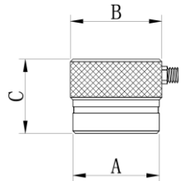
Probe Specification					
Frequency	Nominal Element Size		Model		
MHz	mm	in	PL	PH	C
0.5	19	0.75	/	N4-0.5P19-H	/
	25	1.00	/	N4-0.5P25-H	/
	29	1.125	/	N4-0.5P29-H	/
1	13	0.50	N4-1P13	N4-1P13-H	N4-1C13
	19	0.75	N4-1P19	N4-1P19-H	/
	25	1.00	N4-1P25	N4-1P25-H	/
	29	1.125	N4-1P29	N4-1P29-H	/
2.25	13	0.50	N4-2.25P13	N4-2.25P13-H	N4-2.25C13
	19	0.75	N4-2.25P19	N4-2.25P19-H	/
	25	1.00	N4-2.25P25	N4-2.25P25-H	/
	29	1.125	N4-2.25P29	N4-2.25P29-H	/
3.5	13	0.50	N4-3.5P13	N4-3.5P13-H	/
	19	0.75	N4-3.5P19	N4-3.5P19-H	/
	25	1.00	N4-3.5P25	N4-3.5P25-H	/
5	13	0.50	N4-5P13	N4-5P13-H	/
	19	0.75	N4-5P19	N4-5P19-H	/
	25	1.00	N4-5P25	N4-5P25-H	/
7.5	13	0.50	N4-7.5P13	N4-7.5P13-H	/
10	13	0.50	N4-10P13	N4-10P13-H	/

North America Standard - N5

- Low height probes, suitable for narrow and limited detection environments
- Lemo 00(C5) side mounting connector, with handle bar
- Can be customized as top mounting connector

Probe Specification					
Frequency	Nominal Element Size		Model		
MHz	mm	in	PL	PH	C
1	13	0.50	N5-1P13	N5-1P13-H	N5-1C13
	19	0.75	N5-1P19	N5-1P19-H	/
	25	1.00	N5-1P25	N5-1P25-H	/
2.25	6	0.25	N5-2.25P6	N5-2.25P6-H	N5-2.25C6
	10	0.375	N5-2.25P10	N5-2.25P10-H	N5-2.25C10
	13	0.50	N5-2.25P13	N5-2.25P13-H	N5-2.25C13
	19	0.75	N5-2.25P19	N5-2.25P19-H	/
	25	1.00	N5-2.25P25	N5-2.25P25-H	/
3.5	6	0.25	N5-3.5P6	N5-3.5P6-H	N5-3.5C6
	10	0.375	N5-3.5P10	N5-3.5P10-H	N5-3.5C10
	13	0.50	N5-3.5P13	N5-3.5P13-H	/
	19	0.75	N5-3.5P19	N5-3.5P19-H	/
	25	1.00	N5-3.5P25	N5-3.5P25-H	/
5	6	0.25	N5-5P6	N5-5P6-H	N5-5C6
	10	0.375	N5-5P10	N5-5P10-H	N5-5C10
	13	0.50	N5-5P13	N5-5P13-H	/
	19	0.75	N5-5P19	N5-5P19-H	/
7.5	6	0.25	N5-7.5P6	N5-7.5P6-H	/
	10	0.375	N5-7.5P10	N5-7.5P10-H	/
	13	0.50	N5-7.5P13	N5-7.5P13-H	/
10	6	0.25	N5-10P6	N5-10P6-H	/
	10	0.375	N5-10P10	N5-10P10-H	/
	13	0.50	N5-10P13	N5-10P13-H	/
15	3	0.125	/	N5-15P3-H	/
	6	0.375	/	N5-15P6-H	/
20	3	0.125	/	N5-20P3-H	/
25	3	0.125	/	N5-25P3-H	/

Probe Dimensions							
Nominal Element Size	A		B		C		
mm	in	mm	in	mm	in	mm	in
3	0.125	6.5	0.26	7.5	0.3	10	0.4
6	0.25	9	0.35	10.5	0.41	13	0.51
10	0.375	14	0.55	15	0.59	14	0.55
13	0.50	17	0.66	18	0.71	16	0.64
19	0.75	24	0.95	25	0.97	16	0.64
25	1.00	29	1.15	30	1.18	16	0.64



Contact - Normal Incidence Shear Wave Probes

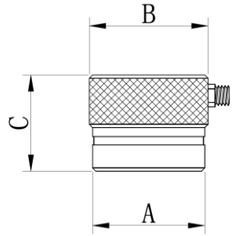
The normal shear wave probe is a single-element transducer that directly contacts the workpiece and generates transverse wave by vertical incidence.

Applications

- Measurement of shear wave sound velocity of workpiece
- Calculation of Young's modulus of elasticity and shear modulus
- Analysis of workpiece grain structure

Features

- Incident vertically and generate shear waves inside the workpiece
- Sensitivity is usually lower than that of LW straight probe
- Low probe height, suitable for the situation of limited space
- High viscosity couplant is required, and the order code of couplant is 6JS0124*
- The polarization direction of shear wave is consistent with the interface direction
- Probe interface is side mounted Microdot by default, top mounting can be customized



Probe Specification			
Frequency	Nominal Element Size		Model
MHz	mm	in	
0.5	25	1.00	SN0.5P25
1	13	0.50	SN1P13
	19	0.75	SN1P19
	25	1.00	SN1P25
2.25	10	0.375	SN2.25P10
	13	0.50	SN2.25P13
2.5	6	0.25	SN2.5P6
	10	0.375	SN2.5P10
	13	0.50	SN2.5P13
4	10	0.375	SN4P10
	13	0.50	SN4P13
5	6	0.25	SN5P6
	10	0.38	SN5P10

Probe Dimensions							
Nominal Element Size		A		B		C	
mm	in	mm	in	mm	in	mm	in
6	0.25	9	0.35	10.5	0.41	13	0.51
10	0.375	14	0.55	15	0.59	14	0.55
13	0.50	17	0.66	18	0.71	16	0.64
19	0.75	24	0.95	25	0.97	16	0.64
25	1.00	29	1.15	30	1.18	16	0.64

*In order to obtain the best coupling effect between probe and workpiece, we suggest placing a small amount of high viscosity coupling agent on the surface of the probe and scraping the coupling agent into thin sheets with a blade or card; Couple the probe to the workpiece and rotate it while pressing down.

Contact - Protective Face Probes

- Replaceable protective films, sound wave vertical incidence and direct contact with workpiece

Features

- Provide soft film or wear-resistant cover for different applications
- The soft film can reduce the effect of coupling on uneven or rough surfaces
- The wear-resistant cover is suitable for rapid scanning on rough surfaces
- The front soft film and wear-resistant cover can be replaced to prolong the service life of the probe
- For European standard only provides the soft film option, for the North America standard we can provide both the soft film and wear-resistant cover

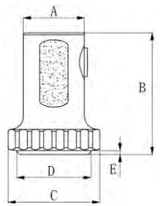
Applications

- Simple structure of metals
- Large plates, bars, forgings, metals and non-metals
- Small tanks, pipes, castings, bars
- Sandwich and laminated structures

European Standard PF1

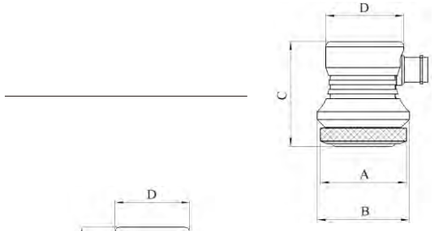
Probe Dimensions												
Nominal Element Size		A		B		C		D		E		Connector Direction
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
10	0.375	20.0	0.79	42.5	1.67	24.0	0.94	14.0	0.55	1.5	0.06	Lemo-00/Side Mounting
24	0.94	30.0	1.18	59.5	2.34	45.0	1.77	29.0	1.14	1.5	0.06	Lemo-1/Side Mounting

Probe Specification			
Frequency	Nominal Element Size		Model
MHz	mm	in	PL
2	10	0.375	PF1-2P10
	24	0.94	PF1-2P24
4	10	0.375	PF1-4P10
	24	0.94	PF1-4P24
5	10	0.375	PF1-5P10
	24	0.94	PF1-5P24

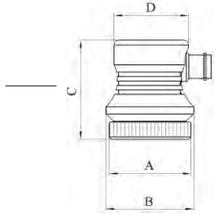


Membrance Specification			
Type	Model	Nominal Element Size	
		mm	in
Soft Film	2QT0150	10	0.375
	3SS0058	24	0.94
Threaded Collar	3WK0545	10	0.375
	3WK0564	24	0.94

Dimensions(Soft Film)									
Nominal Element Size	A		B		C		D		
mm	in	mm	in	mm	in	mm	in	mm	in
13	0.50	25	0.98	28.5	1.12	41	1.61	22	0.87
19	0.75	33	1.30	36.5	1.44	41	1.61	30	1.18
25	1.00	38	1.50	40.5	1.59	41	1.61	34	1.34



Dimensions(Wear-Resistant Cover)									
Nominal Element Size	A		B		C		D		
mm	in	mm	in	mm	in	mm	in	mm	in
13	0.50	25	0.98	28.5	1.12	42	1.65	22	0.87
19	0.75	33	1.30	36.5	1.44	42	1.65	30	1.18
25	1.00	38	1.50	40.5	1.59	42	1.65	34	1.34



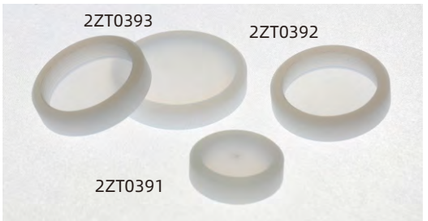
North America Standard PF2

- The probe interface is side mounted BNC by default, and the top mounted BNC can be customized.

Frequency	Nominal Element Size		Models	
MHz	mm	in	Soft Film	Wear-Resistant Cover
1	13	0.5	PF2-1P13	PF2-1P13N
	19	0.75	PF2-1P19	PF2-1P19N
	25	1.0	PF2-1P25	PF2-1P25N
2.25	13	0.5	PF2-2.25P13	PF2-2.25P13N
	19	0.75	PF2-2.25P19	PF2-2.25P19N
	25	1.0	PF2-2.25P25	PF2-2.25P25N
3.5	13	0.5	PF2-3.5P13	PF2-3.5P13N
	19	0.75	PF2-3.5P19	PF2-3.5P19N
	25	1.0	PF2-3.5P25	PF2-3.5P25N
5	13	0.5	PF2-5P13	PF2-5P13N
	19	0.75	PF2-5P19	PF2-5P19N
	25	1.0	PF2-5P25	PF2-5P25N

Fittings(Soft Film Probe)			
Type	Model	Nominal Element Size	
		mm	in
Soft Film	2QT0242	13	0.500
	2QT0243	19	0.750
	2QT0244	25	1.00
Threaded Collar	2QK5890	13	0.500
	2QK5891	19	0.750
	2QK5892	25	1.00

Fittings(Wear-Resistant Cover Probe)			
Type	Model	Nominal Element Size	
		mm	in
Wear-Resistant Cover	2ZT0391	13	0.500
	2ZT0392	19	0.750
	2ZT0393	25	1.00



Contact - Dual Element (TR) Probes

Independent transmit and receive crystals, and creates a creates certain focal length in workpiece.

Features

- No initial pulse dead zone effects
- Less scattering, higher SNR in high attenuation material
- Good coupling on curved and rough surfaces
- Two types of performance probes can meet most of detection needs

"PL" Universal Series, "C " Composite Series

Applications

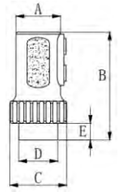
- Corrosion monitoring
- Residual wall measurement
- Coating measurement
- Near surface defects detection
- Cracks, porosities, impurity and porosity detection of forgings
- High attenuation material detection

European Standard

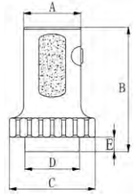
- PL Series is the default probe type
- Lemo 00(C5) side mounting connector

Probe Specification						
Frequency	Nominal Element Size		Focal Length		Model	
MHz	mm	in	mm	in	PL	C
1	Φ21/2	Φ0.83	20	0.79	DA1P21FS20	DA1C21FS20
2	Φ8/2	Φ0.314	6	0.24	DA2P8FS6	DA2C8FS6
2	Φ11/2	Φ0.43	8	0.31	DA2P11FS8	DA2C11FS8
2	3.5 x 10	0.14 x 0.39	10	0.39	DA2P3.5 x 10FS10	DA2C3.5 x 10FS10
2	3.5 x 10	0.14 x 0.39	18	0.71	DA2P3.5 x 10FS18	DA2C3.5 x 10FS18
2	7 x 18	0.28 x 0.71	15	0.59	DA2P7 x 18FS15	DA2C7 x 18FS15
2	7 x 18	0.28 x 0.71	30	1.18	DA2P7 x 18FS30	DA2C7 x 18FS30
4	Φ8/2	Φ0.314	6	0.24	DA4P8FS6	DA4C8FS6
4	3.5 x 10	0.14 x 0.39	10	0.39	DA4P3.5 x 10FS10	DA4C3.5 x 10FS10
4	3.5 x 10	0.14 x 0.39	18	0.71	DA4P3.5 x 10FS18	DA4C3.5 x 10FS18
4	6 x 20	0.24 x 0.79	12	0.47	DA4P6 x 20FS12	DA4C6 x 20FS12
4	6 x 20	0.24 x 0.79	25	0.98	DA4P6 x 20FS25	DA4C6 x 20FS25
5	Φ8/2	Φ0.314	3	0.12	DA5P8FS3	DA5C8FS3
5	Φ9/2	Φ0.35	10	0.39	DA5P9FS10	DA5C9FS10
5	Φ9/2	Φ0.35	25	0.98	DA5P9FS25	DA5C9FS25
10	Φ5/2	Φ0.2	3	0.12	DA10P5FS3	DA10C5FS3

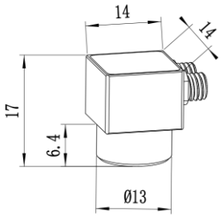
Probe Dimensions												
Nominal Element Size		A		B		C		D		E		Connector Direction
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
Φ9/2	Φ0.35	20.0	0.79	49.0	1.93	24.5	0.96	12.0	0.47	8.0	0.31	Lemo-00/ Side Mounting
Φ11/2	Φ0.43											
3.5 x 10	0.14 x 0.39	20.0	0.79	49.0	1.93	24.5	0.96	16.5	0.65	8.0	0.31	



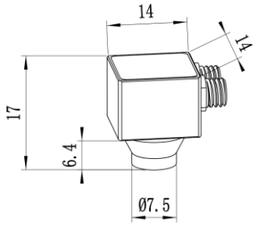
Probe Dimensions												
Nominal Element Size		A		B		C		D		E		Connector Direction
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
Φ21/2	Φ0.83											
6 x 20	0.24 x 0.79	30.0	1.18	65.3	2.57	44.5	1.75	28.5	1.12	7.5	0.30	Lemo-00/ Side Mounting
7 x 18	0.28 x 0.71											

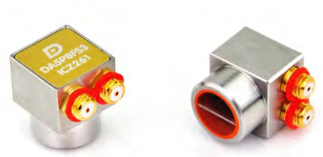


Probe Dimensions		
Nominal Element Size		Connector Direction
mm	in	
Φ8/2	0.314	Microdot/ Side Mounting



Probe Dimensions		
Nominal Element Size		Connector Direction
mm	in	
Φ5/2	0.20	Microdot/ Side Mounting





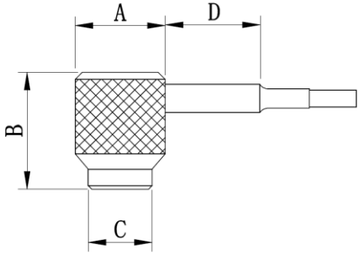
DA5P8FS3

North America Standard

- Low height probes, suitable for narrow and limited detection environments
- Side mounting with 1.8 meter cable length, cable end with Lemo 01(C9), or BNC(Q9) connectors(optional)

Probe Specification						
Frequency	Nominal Element Size		Model			
			Cable End with BNC		Cable End with Lemo 01	
MHz	mm	in	PL	C	PL	C
2.25	6	0.25	DA3-2.25P6-B	DA3-2.25C6-B	DA3-2.25P6-1	DA3-2.25C6-1
	10	0.375	DA3-2.25P10-B	DA3-2.25C10-B	DA3-2.25P10-1	DA3-2.25C10-1
	13	0.50	DA3-2.25P13-B	DA3-2.25C13-B	DA3-2.25P13-1	DA3-2.25C13-1
3.5	6	0.25	DA3-3.5P6-B	DA3-3.5C6-B	DA3-3.5P6-1	DA3-3.5C6-1
	10	0.375	DA3-3.5P10-B	DA3-3.5C10-B	DA3-3.5P10-1	DA3-3.5C10-1
	13	0.50	DA3-3.5P13-B	DA3-3.5C13-B	DA3-3.5P13-1	DA3-3.5C13-1
5	6	0.25	DA3-5P6-B	DA3-5C6-B	DA3-5P6-1	DA3-5C6-1
	10	0.375	DA3-5P10-B	DA3-5C10-B	DA3-5P10-1	DA3-5C10-1
	13	0.50	DA3-5P13-B	DA3-5C13-B	DA3-5P13-1	DA3-5C13-1
7.5	6	0.250	DA3-7.5P6-B	DA3-7.5C6-B	DA3-7.5P6-1	DA3-7.5C6-1
10	6	0.25	DA3-10P6-B	DA3-10C6-B	DA3-10P6-1	DA3-10C6-1

Probe Dimensions									
Nominal Element Size		A		B		C		D	
mm	in	mm	in	mm	in	mm	in	mm	in
6	0.25	12.0	0.47	16.5	0.65	9.5	0.37	22.0	0.87
10	0.375	16.0	0.63	16.5	0.65	12.0	0.47	22.0	0.87
13	0.50	19.5	0.77	17.0	0.67	15.5	0.61	22.0	0.87



DA3-5P13-1

DA3-2.25C10-1

DA3-10P6-1

Contact - Angle Beam Probes and Wedges

Refracting ultrasonic beams and generate shear or longitudinal waves to workpiece through a fix angle of delay line.

Features

- Ergonomic design, with durable cast housing
- Customizable any theoretical angles of ultrasound
- Probe face can be processed into different shapes to ensure good coupling with workpiece:
  AID(Axial Inside Diameter) CID(Circumferential Inside Diameter)
  AOD(Axial Outside Diameter) COD(Circumferential Outside Diameter)
- Three types of performance can meet the most of detection needs:

  “PL ” Universal Series, “PH ” Short Pulsing Series, “C ” Composite Series

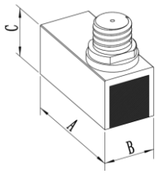
Applications

- For welding inspection
- Pipes, pressure vessels, storage tanks
- Turbine blades
- Wheel axles, castings, forgings
- Bond testing
- Railway wheels and tracks

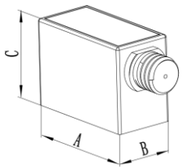
European Standard

- PL Series is the default probe type
- Microdot(L5), Lemo 00(C5), and Lemo 01 (C9) top side mounting connectors, all models can be customized for top mounting except size 3*4mm

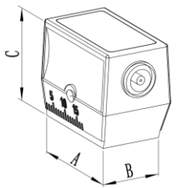
Probe Dimensions								
Nominal Element Size		A		B		C		Connector Direction
mm	in	mm	in	mm	in	mm	in	
3 x 4	0.12 x 0.16	16.0	0.60	7.0	0.30	7.0	0.30	Microdot/Top Mounting



Probe Dimensions								
Nominal Element Size		A		B		C		Connector Direction
mm	in	mm	in	mm	in	mm	in	
5x 5	0.2 x 0.2	16.0	0.63	8.0	0.31	11.5	0.45	Microdot/Side Mounting



Probe Dimensions								
Nominal Element Size		A		B		C		Connector Direction
mm	in	mm	in	mm	in	mm	in	
8x9	0.31 x 0.35	27.0	1.10	16.6	0.65	22.0	0.86	Lemo-00/Side Mounting
14x14	0.55 x 0.55	36.0	1.40	21.0	0.80	30.5	1.20	
20x22	0.79 x 0.87	54.0	2.10	32.0	1.30	44.0	1.70	Lemo-1/Side Mounting



Probe Specification							
Frequency	a x b		β(°)	Near Field		Model	
MHz	mm	in	Steel	mm	in	PL	C
1	20 x 22	0.79 x 0.87	45	45	1.8	A1P20 x 22A45	A1C20 x 22A45
1	20 x 22	0.79 x 0.87	60	45	1.8	A1P20 x 22A60	A1C20 x 22A60
1	20 x 22	0.79 x 0.87	70	45	1.8	A1P20 x 22A70	A1C20 x 22A70
2	8 x 9	0.31 x 0.35	38	15	0.6	A2P8 x 9A38	A2C8 x 9A38
2	8 x 9	0.31 x 0.35	45	15	0.6	A2P8 x 9A45	A2C8 x 9A45
2	8 x 9	0.31 x 0.35	60	15	0.6	A2P8 x 9A60	A2C8 x 9A60
2	8 x 9	0.31 x 0.35	70	15	0.6	A2P8 x 9A70	A2C8 x 9A70
2	8 x 9	0.31 x 0.35	90	15	0.6	A2P8 x 9A90	A2C8 x 9A90
2	14 x 14	0.55 x 0.55	45	39	1.5	A2P14 x 14A45	A2C14 x 14A45
2	14 x 14	0.55 x 0.55	60	39	1.5	A2P14 x 14A60	A2C14 x 14A60
2	14 x 14	0.55 x 0.55	70	39	1.5	A2P14 x 14A70	A2C14 x 14A70
2	20 x 22	0.79 x 0.87	38	92	3.6	A2P20 x 22A38	A2C20 x 22A38
2	20 x 22	0.79 x 0.87	45	92	3.6	A2P20 x 22A45	A2C20 x 22A45
2	20 x 22	0.79 x 0.87	60	92	3.6	A2P20 x 22A60	A2C20 x 22A60
2	20 x 22	0.79 x 0.87	70	92	3.6	A2P20 x 22A70	A2C20 x 22A70
4	8 x 9	0.31 x 0.35	38	30	1.2	A4P8 x 9A38	A4C8 x 9A38
4	8 x 9	0.31 x 0.35	45	30	1.2	A4P8 x 9A45	A4C8 x 9A45
4	8 x 9	0.31 x 0.35	60	30	1.2	A4P8 x 9A60	A4C8 x 9A60
4	8 x 9	0.31 x 0.35	70	30	1.2	A4P8 x 9A70	A4C8 x 9A70
4	8 x 9	0.31 x 0.35	90	30	1.2	A4P8 x 9A90	A4C8 x 9A90
4	14 x 14	0.55 x 0.55	45	78	3.0	A4P14 x 14A45	A4C14 x 14A45
4	14 x 14	0.55 x 0.55	60	78	3.0	A4P14 x 14A60	A4C14 x 14A60
4	14 x 14	0.55 x 0.55	70	78	3.0	A4P14 x 14A70	A4C14 x 14A70
4	20 x 22	0.79 x 0.87	38	184	7.2	A4P20 x 22A38	/
4	20 x 22	0.79 x 0.87	45	184	7.2	A4P20 x 22A45	/
4	20 x 22	0.79 x 0.87	60	184	7.2	A4P20 x 22A60	/
4	20 x 22	0.79 x 0.87	70	184	7.2	A4P20 x 22A70	/
5	5 x 5	0.2 x 0.2	45	13	0.5	A5P5*5A45	A5C5*5A45
5	5 x 5	0.2 x 0.2	60	13	0.5	A5P5*5A60	A5C5*5A60
5	5 x 5	0.2 x 0.2	70	13	0.5	A5P5*5A70	A5C5*5A70
5	14 x 14	0.55 x 0.55	45	100	3.9	A5P14 x 14A45	/
5	14 x 14	0.55 x 0.55	60	100	3.9	A5P14 x 14A60	/
5	14 x 14	0.55 x 0.55	70	100	3.9	A5P14 x 14A70	/
6	3 x 4	0.12 x 0.16	45	7	0.27	A6P3*4A45	A6C3*4A45
6	3 x 4	0.12 x 0.16	60	7	0.27	A6P3*4A60	A6C3*4A60
6	3 x 4	0.12 x 0.16	70	7	0.27	A6P3*4A70	A6C3*4A70

A4P20X22A45

A5P5X5A70

A2P14X14A70

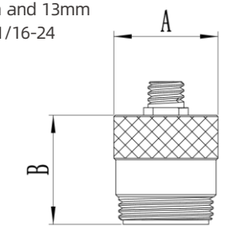
A4P8X9A45

A6P3X4A70

North America Standard A3

- The probe and delay line can be disassembled quickly
- Delay lines are divided into two types: standard cutting edge and short cutting edge
- The corresponding thread is 1/2-28 and 5/8-24 for probes and delay line with diameter 10mm and 13mm separately. OP type can be indicated when ordering with corresponding thread 9/16-24 and 11/16-24
- Microdot top mounting connector

Probe Dimensions						
Nominal Element Size		A		B		Connector Direction
mm	in	mm	in	mm	in	
6	0.25	11	0.42	14	0.56	Microdot/ Top Mounting
10	0.375	14	0.55	15	0.58	
13	0.50	18	0.70	17	0.65	



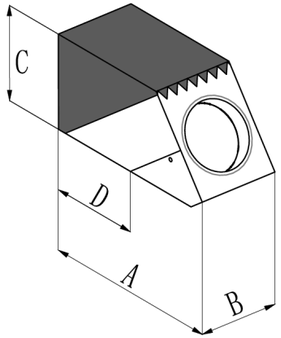
Probe Specification						
Frequency	Nominal Element Size		Model			Threads
MHz	mm	in	PL	PH	C	in
1	13	0.50	A3-1P13	A3-1P13-H	A3-1C13	5/8-24
2.25	6	0.25	A3-2.25P6	A3-2.25P6-H	A3-2.25C6	3/8-32
	10	0.375	A3-2.25P10	A3-2.25P10-H	A3-2.25C10	1/2-28
	13	0.50	A3-2.25P13	A3-2.25P13-H	A3-2.25C13	5/8-24
3.5	6	0.25	A3-3.5P6	A3-3.5P6-H	A3-3.5C6	3/8-32
	10	0.375	A3-3.5P10	A3-3.5P10-H	A3-3.5C10	1/2-28
	13	0.50	A3-3.5P13	A3-3.5P13-H	A3-3.5C13	5/8-24
5	6	0.25	A3-5P6	A3-5P6-H	A3-5C6	3/8-32
	10	0.375	A3-5P10	A3-5P10-H	A3-5C10	1/2-28
	13	0.50	A3-5P13	A3-5P13-H	A3-5C13	5/8-24
7.5	6	0.25	A3-7.5P6	A3-7.5P6-H	A3-7.5C6	3/8-32

A3-2.25P13

A3-5P10

A3-2.25P6

Standard Delay Line Dimensions												
Model	β (°)	A		B		C		D		Threads	Nominal Element Size	
	Steel	mm	in	mm	in	mm	in	mm	in	in	mm	in
Φ6-45°	45	19.1	0.75	11.4	0.45	9.4	0.37	9.5	0.37	3/8-32	6	0.25
Φ6-60°	60	21.3	0.84	11.4	0.45	11.2	0.44	10.8	0.43	3/8-32		
Φ6-70°	70	25.4	1.00	11.4	0.45	12.7	0.50	13.5	0.53	3/8-32		
Φ6-90°	90	24.1	0.95	11.4	0.45	12.7	0.50	/	/	3/8-32		
Φ10-45°	45	22.6	0.89	14	0.55	11.9	0.47	12.2	0.48	1/2-28	10	0.375
Φ10-60°	60	26.4	1.04	14	0.55	14	0.55	12.8	0.50	1/2-28		
Φ10-70°	70	30.2	1.19	14	0.55	14.7	0.58	17	0.67	1/2-28		
Φ10-90°	90	29.5	1.15	14	0.55	14.7	0.61	/	/	1/2-28		
Φ13-45°	45	26.7	1.05	17.8	0.70	14	0.55	14.5	0.57	5/8-24	13	0.5
Φ13-60°	60	31.5	1.24	17.8	0.70	16.3	0.64	18.5	0.73	5/8-24		
Φ13-70°	70	35.8	1.41	17.8	0.70	17.3	0.68	20.5	0.81	5/8-24		
Φ13-90°	90	35.5	1.39	17.8	0.70	18.5	0.73	/	/	5/8-24		



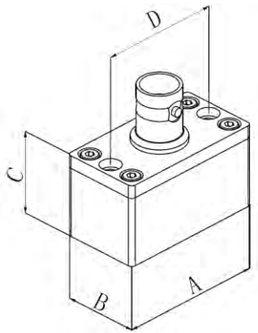
Short Delay Line Dimensions												
Model	β (°)	A		B		C		D		Threads	Nominal Element Size	
	Steel	mm	in	mm	in	mm	in	mm	in	in	mm	in
Φ6-45°	45	15.5	0.61	11.4	0.45	10.9	0.43	5.8	0.23	3/8-32	6	0.25
Φ6-60°	60	18.0	0.71	11.4	0.45	12.2	0.48	6.8	0.27	3/8-32		
Φ6-70°	70	20.6	0.81	11.4	0.45	12.7	0.50	7.8	0.31	3/8-32		
Φ10-45°	45	21.6	0.85	14	0.55	15.2	0.60	8	0.31	1/2-28	10	0.375
Φ10-60°	60	25.4	1.00	14	0.55	17	0.67	9	0.35	1/2-28		
Φ10-70°	70	28.4	1.12	14	0.55	17.5	0.69	10	0.39	1/2-28		
Φ13-45°	45	26.2	1.03	17.8	0.70	17.8	0.70	8.5	0.33	5/8-24	13	0.5
Φ13-60°	60	30.2	1.19	17.8	0.70	18.8	0.74	10.8	0.43	5/8-24		
Φ13-70°	70	34.0	1.34	17.8	0.70	20.1	0.79	12.2	0.48	5/8-24		

North America Standard A4

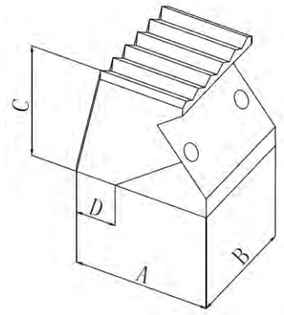
- The larger wafer size enables the detection of thicker workpieces
- Delay lines are divided into SL and RL, among which RL series conforms to the requirements of AWS Specification D1.1
- High temperature resistance series delay line can be customized
- The probe is equipped with a non - falling screw and delay line can be disassembled tool free
- The probe interface is BNC top by default

Probe Specification					
Frequency	Nominal Element Size		Model		
MHz	mm	in	PL	PH	C
0.5	ϕ25	1	A4-0.5P25	A4-0.5P25-H	/
1	ϕ13	0.5	A4-1P13	A4-1P13-H	A4-1C13
	13x25	0.5x1	A4-1P13x25	A4-1P13x25-H	A4-1C13x25
	19x25	0.75x1	A4-1P19x25	A4-1P19x25-H	/
	ϕ25	1	A4-1P25	A4-1P25-H	/
2.25	ϕ13	0.5	A4-2.25P13	A4-2.25P13-H	A4-2.25C13
	13x25	0.5x1	A4-2.25P13x25	A4-2.25P13x25-H	A4-2.25C13x25
	16x16	0.63x0.63	A4-2.25P16x16	A4-2.25P16x16-H	A4-2.25C16x16
	16x19	0.63x0.75	A4-2.25P16x19	A4-2.25P16x19-H	A4-2.25C16x19
	19x19	0.75x0.75	A4-2.25P19x19	A4-2.25P19x19-H	/
	19x25	0.75x1	A4-2.25P19x25	A4-2.25P19x25-H	/
	ϕ25	1	A4-2.25P25	A4-2.25P25-H	/
3.5	ϕ13	0.5	A4-3.5P13	A4-3.5P13-H	A4-3.5C13
	13x25	0.5x1	A4-3.5P13x25	A4-3.5P13x25-H	A4-3.5C13x25
	19x25	0.75x1	A4-3.5P19x25	A4-3.5P19x25-H	/
	ϕ25	1	A4-3.5P25	A4-3.5P25-H	/
5	ϕ13	0.5	A4-5P13	A4-5P13-H	A4-5C13
	13x25	0.5x1	A4-5P13x25	A4-5P13x25-H	A4-5C13x25
	19x25	0.75x1	A4-5P19x25	A4-5P19x25-H	/
	ϕ25	1	A4-5P25	A4-5P25-H	/

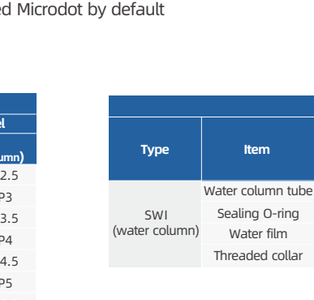
Probe Dimensions									
Nominal Element Size		A		B		C		D	
mm	in	mm	in	mm	in	mm	in	mm	in
ϕ13	0.5	26	1.02	18.3	0.72	18	0.71	20.6	0.81
13x25	0.5x1	39	1.54	18.5	0.73	18	0.71	33.3	1.31
16x16	0.63x0.63	32	1.26	18.5	0.73	18	0.71	25.4	1.00
16x19	0.63x0.75	32	1.26	18.5	0.73	18	0.71	25.4	1.00
19x19	0.75x0.75	32	1.26	21.5	0.85	18	0.71	25.4	1.00
19x25	0.75x1	39	1.54	25.4	1.00	18	0.71	33.3	1.31
ϕ25	1	42	1.65	31	1.22	18	0.71	35.1	1.38



SL Delay Line Dimensions											
Model	β (°)	A		B		C		D		Nominal Element Size	
	Steel	mm	in	mm	in	mm	in	mm	in	mm	in
SL-Φ13-45°	45	33.5	1.32	27.5	1.08	31	1.22	18	0.71	13	0.5
SL-Φ13-60°	60	37.5	1.48	27.5	1.08	31	1.22	17.5	0.69		
SL-Φ13-70°	70	40.5	1.59	27.5	1.08	31	1.22	17.5	0.69		
SL-Φ13-90°	90	34	1.34	27.5	1.08	31	1.22	/	/		
SL-13x25-45°	45	35.5	1.40	40.5	1.59	33	1.30	19.5	0.77	13x25	0.5x1
SL-13x25-60°	60	37	1.46	40.5	1.59	33	1.30	17	0.67		
SL-13x25-70°	70	44	1.73	40.5	1.59	34	1.34	21	0.83		
SL-13x25-90°	90	34.5	1.36	40.5	1.59	30	1.18	/	/		
SL-19x25-45°	45	42	1.65	40.5	1.59	35	1.38	20.5	0.81	19x25	0.75x1
SL-19x25-60°	60	47	1.85	40.5	1.59	36	1.42	20	0.79		
SL-19x25-70°	70	53	2.09	40.5	1.59	38	1.50	23	0.91		
SL-19x25-90°	90	50	1.97	40.5	1.59	38	1.50	/	/		
SL-Φ25-45°	45	50	1.97	41.5	1.63	37	1.46	25	0.98	25	1
SL-Φ25-60°	60	56	2.20	41.5	1.63	38	1.50	24	0.94		
SL-Φ25-70°	70	63	2.48	41.5	1.63	38	1.50	28.5	1.12		
SL-Φ25-90°	90	63	2.48	41.5	1.63	38	1.50	/	/		



RL Delay Line Dimensions											
Model	β (°)	A		B		C		D		Nominal Element Size	
	Steel	mm	in	mm	in	mm	in	mm	in	mm	in
RL-45°	45	45	1.77	31.8	1.25	54.5	2.15	15.8	0.62	16x16	0.63x0.63
RL-60°	60	46	1.81	31.8	1.25	48.5	1.91	16.5	0.65	16x19	0.63x0.75
RL-70°	70	49	1.93	31.8	1.25	55	2.17	17	0.67	19x19	0.75x0.75



Contact - Spot Weld Probes

The spot welding probe is a single element transducer that contacts the workpiece through a specific water column.

Applications

- Integrity measurement of spot welding quality in automobile or other industries

Features

- The soft film can reduce the impact of coupling on uneven spot welding
- Different element sizes are used to measure the quality of spot welding of different sizes
- The probe interface is side mounted Microdot by default

Probe Specification			
Frequency	Nominal Element Size		Model
MHz	mm	in	SWI (water column)
15	2.5	0.10	SWI15P2.5
	3	0.12	SWI15P3
	3.5	0.14	SWI15P3.5
	4	0.16	SWI15P4
	4.5	0.18	SWI15P4.5
	5	0.20	SWI15P5
	5.5	0.22	SWI15P5.5
	6	0.24	SWI15P6
20	2.5	0.10	SWI20P2.5
	3	0.12	SWI20P3
	3.5	0.14	SWI20P3.5
	4	0.16	SWI20P4
	4.5	0.18	SWI20P4.5
	5	0.20	SWI20P5
	5.5	0.22	SWI20P5.5
	6	0.24	SWI20P6

Structural Accessories									
Type	Item	Model							
		Nominal Element Size (mm)							
		2.5	3	3.5	4	4.5	5	5.5	6
SWI (water column)	Water column tube	2QT0247					2QT0248		
	Sealing O-ring	3SS0880					3SS0881		
	Water film	2QT0245					2QK5893		
	Threaded collar	2QK5893					2QK5894		

Contact - TRL Angle Beam Probes

Independent transmit and receive crystals, refracting ultrasonic beam angles and creates certain focal length in workpiece.

Features

- No initial pulse dead zone effects
- Less scattering, higher SNR in high attenuation material
- All refractive angles are longitudinal waves and can be customized to any longitudinal wave angle within ultrasonic theory
- Probe face can be processed into different shapes to ensure good coupling with workpiece:
  AID(Axial Inside Diameter), CID(Circumferential Inside Diameter),
  AOD(Axial Outside Diameter), COD(Circumferential Outside Diameter)
- Two types of performance probes can meet most of detection needs:

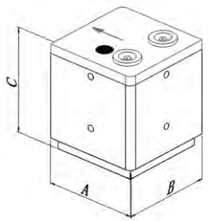
"PL " Universal Series, " R " High Performance Series

DA1.5C20X34LA45FS80-IAOD980

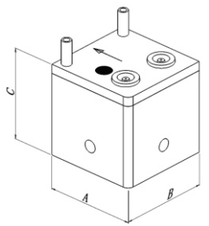
DA2C15X25LA45FD40

DA2C8X14LA45FD25

Probe Dimensions(DA Model)								
Nominal Element Size		A		B		C		Clamping Holes
mm	in	mm	in	mm	in	mm	in	mm
7×10	0.28×0.39	20.0	0.79	20.0	0.79	25.0	0.98	ϕ2
8×14	0.31×0.55	25.0	0.98	25.0	0.98	30.0	1.18	
10×18	0.39×0.71	30.0	1.18	30.0	1.18	30.0	1.18	
15×25	0.59×0.98	40.0	1.57	40.0	1.57	35.0	1.38	
20×34	0.79×1.34	50.0	1.97	50.0	1.97	35.0	1.38	



Probe Dimensions(CDA Model)								
Nominal Element Size		A		B		C		Clamping Holes
mm	in	mm	in	mm	in	mm	in	mm
7×10	0.28×0.39	20.0	0.79	20.0	0.79	25.0	0.98	M4×0.7
8×14	0.31×0.55	25.0	0.98	25.0	0.98	30.0	1.18	
10×18	0.39×0.71	30.0	1.18	30.0	1.18	30.0	1.18	
15×25	0.59×0.98	40.0	1.57	40.0	1.57	35.0	1.38	
20×34	0.79×1.34	50.0	1.97	50.0	1.97	35.0	1.38	



Applications

- Nuclear power station
- Austenitic stainless steel
- Near surface flaw detection
- Plate weld inspection
- High attenuation materials

Instructions

- R series is the default probe type
- Default delay lines is 4mm exposed, and the delay lines can be customized and embedded
- The default shell of the probe is DA type, with no inlet pipe or water guide groove. If the probe needs to be clamped and scanned with a fixture, it can be replaced with a CDA type shell (inlet pipe+water guide groove+clamping hole)
- FS means sound path, FD means focal depth, conversion of FS, FD and β is: Cosβ=FD/(FS+0.5D), where D is diameter
- The engraved lines on both sides of the shell indicate the incident point, the arrow at the top indicates the direction of the sound axis, and the red circle at the top indicates that the interface on this side is the transmitting end (T)
- The probe interface defaults to the top mounted Lemo-00 and can be customized with a side mounted direction

Probe Specification									
Frequency	a x b		β (°)	Focal Length(FS)				Model	
				Min		Max			
MHz	mm	in	ss	mm	in	mm	in	PL	R
0.5	20 x 34	0.79 x 1.34	45	25	0.98	60	2.36	/	DA0.5R20 x 34LA45
0.5	20 x 34	0.79 x 1.34	60	20	0.79	35	1.38	/	DA0.5R20 x 34LA60
0.5	20 x 34	0.79 x 1.34	70	20	0.79	30	1.18	/	DA0.5R20 x 34LA60
1	8 x 14	0.31 x 0.55	45	10	0.39	25	0.98	DA1P8 x 14LA45	DA1R8 x 14LA45
1	8 x 14	0.31 x 0.55	60	10	0.39	20	0.79	DA1P8 x 14LA60	DA1R8 x 14LA60
1	8 x 14	0.31 x 0.55	70	10	0.39	20	0.79	DA1P8 x 14LA70	DA1R8 x 14LA70
1	10 x 18	0.39 x 0.71	45	15	0.59	30	1.18	DA1P10 x 18LA45	DA1R10 x 18LA45
1	10 x 18	0.39 x 0.71	60	15	0.59	30	1.18	DA1P10 x 18LA60	DA1R10 x 18LA60
1	10 x 18	0.39 x 0.71	70	15	0.59	25	0.98	DA1P10 x 18LA70	DA1R10 x 18LA70
1	15 x 25	0.59 x 0.98	45	20	0.79	55	2.17	DA1P15 x 25LA45	DA1R15 x 25LA45
1	15 x 25	0.59 x 0.98	60	20	0.79	45	1.77	DA1P15 x 25LA60	DA1R15 x 25LA60
1	15 x 25	0.59 x 0.98	70	15	0.59	40	1.57	DA1P15 x 25LA70	DA1R15 x 25LA70
1	20 x 34	0.79 x 1.34	45	30	1.18	80	3.15	DA1P20 x 34LA45	DA1R20 x 34LA45
1	20 x 34	0.79 x 1.34	60	25	0.98	75	2.95	DA1P20 x 34LA60	DA1R20 x 34LA60
1	20 x 34	0.79 x 1.34	70	25	0.98	70	2.76	DA1P20 x 34LA70	DA1R20 x 34LA70
2	7 x 10	0.28 x 0.39	45	10	0.39	25	0.98	DA2P7 x 10LA45	DA2R7 x 10LA45
2	7 x 10	0.28 x 0.39	60	10	0.39	25	0.98	DA2P7 x 10LA60	DA2R7 x 10LA60
2	7 x 10	0.28 x 0.39	70	10	0.39	20	0.79	DA2P7 x 10LA70	DA2R7 x 10LA70
2	8 x 14	0.31 x 0.55	45	15	0.59	30	1.18	DA2P8 x 14LA45	DA2R8 x 14LA45
2	8 x 14	0.31 x 0.55	60	10	0.39	30	1.18	DA2P8 x 14LA60	DA2R8 x 14LA60
2	8 x 14	0.31 x 0.55	70	10	0.39	25	0.98	DA2P8 x 14LA70	DA2R8 x 14LA70
2	10 x 18	0.39 x 0.71	45	20	0.79	45	1.77	DA2P10 x 18LA45	DA2R10 x 18LA45
2	10 x 18	0.39 x 0.71	60	15	0.59	40	1.57	DA2P10 x 18LA60	DA2R10 x 18LA60
2	10 x 18	0.39 x 0.71	70	15	0.59	30	1.18	DA2P10 x 18LA70	DA2R10 x 18LA70
2	15 x 25	0.59 x 0.98	45	25	0.98	85	3.35	DA2P15 x 25LA45	DA2R15 x 25LA45
2	15 x 25	0.59 x 0.98	60	20	0.79	75	2.95	DA2P15 x 25LA60	DA2R15 x 25LA60
2	15 x 25	0.59 x 0.98	70	20	0.79	70	2.76	DA2P15 x 25LA70	DA2R15 x 25LA70
2	20 x 34	0.79 x 1.34	45	40	1.57	120	4.72	DA2P20 x 34LA45	DA2R20 x 34LA45
2	20 x 34	0.79 x 1.34	60	30	1.18	120	4.72	DA2P20 x 34LA60	DA2R20 x 34LA60
2	20 x 34	0.79 x 1.34	70	30	1.18	105	4.13	DA2P20 x 34LA70	DA2R20 x 34LA70
4	7 x 10	0.28 x 0.39	45	10	0.39	35	1.38	DA4P7 x 10LA45	DA4R7 x 10LA45
4	7 x 10	0.28 x 0.39	60	10	0.39	35	1.38	DA4P7 x 10LA60	DA4R7 x 10LA60
4	7 x 10	0.28 x 0.39	70	10	0.39	30	1.18	DA4P7 x 10LA70	DA4R7 x 10LA70
4	8 x 14	0.31 x 0.55	45	20	0.79	60	2.36	DA4P8 x 14LA45	DA4R8 x 14LA45
4	8 x 14	0.31 x 0.55	60	15	0.59	55	2.17	DA4P8 x 14LA60	DA4R8 x 14LA60
4	8 x 14	0.31 x 0.55	70	10	0.39	50	1.97	DA4P8 x 14LA70	DA4R8 x 14LA70
4	10 x 18	0.39 x 0.71	45	25	0.98	85	3.35	DA4P10 x 18LA45	DA4R10 x 18LA45
4	10 x 18	0.39 x 0.71	60	20	0.79	70	2.76	DA4P10 x 18LA60	DA4R10 x 18LA60
4	10 x 18	0.39 x 0.71	70	15	0.59	60	2.36	DA4P10 x 18LA70	DA4R10 x 18LA70
4	15 x 25	0.59 x 0.98	45	30	1.18	100	3.94	DA4P15 x 25LA45	/
4	15 x 25	0.59 x 0.98	60	25	0.98	90	3.54	DA4P15 x 25LA60	/
4	15 x 25	0.59 x 0.98	70	20	0.79	80	3.15	DA4P15 x 25LA70	/

Contact - Delay Line Probes and Wedges

With replaceable delay line at the front of probe, and sound wave vertical incidence into workpiece.

Features

- Replaceable delay lines
- High bandwidth and narrow pulse with delay line, ensure excellent near surface resolution
- Higher frequency increases resolution of detection

<Note>: Thickness of delay line decides the maximum thickness of workpiece, Doppler Provide 3 different thicknesses of delay lines to meet the most detection cases; Length and materials of delay line can be customized.

Applications

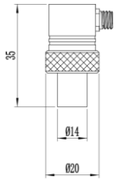
- Direct flaw detection
- Precise thickness measurements
- Near surface flaw detection
- Surface detection of curved workpiece
- Ultra thin workpiece detection

Delay Line (DL)

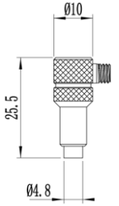
- Delay line can be purchased separately
- Default length of delay lines:
  Φ3mm(0.125in) crystal probe with 5.5mm(0.22in) length of delay line
  Φ5/6/13mm(0.2/0.25/0.5in) crystal probe with 12.7mm(0.5in) length of delay lin
- Microdot (L5) side mounting connector

Probe Specification			
Frequency	Nominal Element Size		Model
MHz	mm	in	PH
2.25	6	0.25	DL-2.25P6-H
	13	0.50	DL-2.25P13-H
3.5	6	0.25	DL-3.5P6-H
5	5	0.20	DL-5P5-H
	6	0.25	DL-5P6-H
	13	0.50	DL-5P13-H
10	3	0.125	DL-10P3-H
	5	0.20	DL-10P5-H
	6	0.25	DL-10P6-H
	13	0.50	DL-10P13-H
15	5	0.20	DL-15P5-H
	6	0.25	DL-15P6-H
20	3	0.125	DL-20P3-H

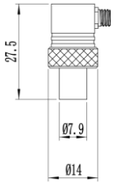
Delay Line Specification				
Model	Length		Nominal Element Size	
	mm	in	mm	in
DLΦ3-5.5	5.5	0.22	3	0.125
DLΦ6-9.5	9.5	0.37	5	0.20
			6	0.25
DLΦ6-12.7	12.7	0.50	5	0.20
			6	0.25
DLΦ13-9.5	9.5	0.37	13	0.50
DLΦ13-12.7	12.7	0.50	13	0.50



Probe Specification	
mm	in
13	0.50



Probe Specification	
mm	in
3	0.125

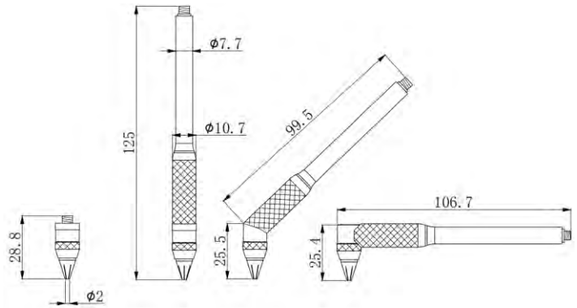


Probe Specification	
mm	in
5	0.20
6	0.25

Delay Line (P)

- Replaceable delay lines
- Ultra small contact area of probe front, suitable for high bending surface detection, such as turbine blades
- 3 types handle bars: horizontal, 45° and 90°
- Replaceable horizontal handle bar
- Delay line can be purchased separately, model: 1GW2912
- Microdot (L5) tail-end mounting connector

Probe Specification			
Frequency	Nominal Element Size		Model
MHz	mm	in	PH
10	3	0.125	P-10P3-H (0°) P-10P3-H (45°) P-10P3-H (90°)
15	3	0.125	P-15P3-H (0°) P-15P3-H (45°) P-15P3-H (90°)



Contact - TOFD Probes

TOFD Probe and Delay Line can generate refracting longitudinal in steel, and use time of flight diffraction technique to determine the cracks.

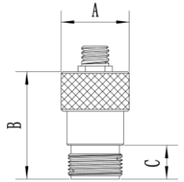
Features

- High damping and wide bandwidth performance
- High efficiency for welding inspection
- Quick change structure of probe and delay line
- IHC for irrigation, holes, carbides of delay line

Applications

- Plate butt weld inspections
- Directional irregular defects
- Near surface defects detection

Probe Dimensions								
Nominal Element Size		A		B		C		Connector Directio
mm	in	mm	in	mm	in	mm	in	
3	0.125	11	0.43	16.5	0.65	6	0.24	Microdot/ Top Mounting
6	0.25							
10	0.375	16	0.63	18	0.71	6.5	0.26	
12	0.50	18	0.71	20	0.79	6.5	0.26	



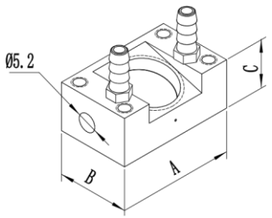
Probe Specification					
Frequency	Nominal Element Size		Models	Threads	Delay Line Model
MHz	mm	in		in	
2.25	6	0.25	TF2.25C6L	3/8-32	TF1
	10	0.375	TF2.25C10L	11/16-24	TF2
	12	0.5	TF2.25C12L	11/16-24	TF2
3.5	6	0.25	TF3.5C6L	3/8-32	TF1
	10	0.375	TF3.5C10L	11/16-24	TF2
5	3	0.125	TF5C3L	3/8-32	TF1
	6	0.25	TF5C6L	3/8-32	TF1
	10	0.375	TF5C10L	11/16-24	TF2
	12	0.5	TF5C12L	11/16-24	TF2
7.5	3	0.125	TF7.5C3L	3/8-32	TF1
	6	0.25	TF7.5C6L	3/8-32	TF1
10	3	0.125	TF10C3L	3/8-32	TF1
	6	0.25	TF10C6L	3/8-32	TF1
15	3	0.125	TF15C3L	3/8-32	TF1

TF1 Delay Line Dimensions								
Model	β (°)	A		B		C		Threads
	Steel	mm	in	mm	in	mm	in	in
TF1-L45-IHC	45							
TF1-L60-IHC	60	32	1.26	21	0.83	13	0.51	3/8-32
TF1-L70-IHC	70							

TF1 Delay Line Dimensions								
Model	β (°)	A		B		C		Threads
	Steel	mm	in	mm	in	mm	in	in
TF1-L45-IHS	45							
TF1-L60-IHS	60	32	1.26	21	0.83	13	0.51	3/8-32
TF1-L70-IHS	70							

TF2 Delay Line Dimensions								
Model	β (°)	A		B		C		Threads
	Steel	mm	in	mm	in	mm	in	in
TF2-L45-IHC	45							
TF2-L60-IHC	60	32	1.26	28	1.1	18	0.71	11/16-24
TF2-L70-IHC	70							

TF2 Delay Line Dimensions								
Model	β (°)	A		B		C		Threads
	Steel	mm	in	mm	in	mm	in	in
TF2-L45-IHS	45							
TF2-L60-IHS	60	32	1.26	28	1.1	18	0.71	11/16-24
TF2-L70-IHS	70							



Contact Probe - Thickness Measurement Probes

Doppler provides an existing solution for most corrosion application sites, providing a complete set of twin- crystal and single-crystal thickness measuring probes for thickness measurement of workpiece, work with Accur 1/3/5 different thickness measuring instruments, to ensure the accuracy of thickness measurement to the greatest extent; besides the measurement of corrosion wall thickness, it can also be used for small diameter pipelines, etc. Measurement and application of tubing, boiler tube wall, penetrating coating, spot weld integrity, probes with different frequencies, contact sizes and special high temperature applications are available for selection.

Probe Type	Model	Application	Frequency	Bottom Contact OD		Range		Operation TEMP		Line-out	Connector	Cable (option)	Accur-* (option)
			MHz	mm	in	mm	in	°F	°C				
Twin Crystal	MT509	Standard/Normal/ Through Coating	5	11.5	0.45	1.5-225 (Through Coating 3~100)	0.06-8 (Through Coating (0.19~3.93)	-4 +140	-20 +60	Side	Lemo-00	1GC0422	1
	MT5096	Standard/Normal	5	11.5	0.45	1.5-50	0.4-2.0	-4 +140	-20 +60	Top	Microdot	1GC0515 1GC0516 1GC0520	1
	MT211	Standard/Normal	2	16.5	0.65	2-225	0.079-8	-4 +140	-20 +60	Side	Lemo-00	1GC0422	1/5
	MT121	Standard/Normal	1	28.5	1.12	8-80	0.31-3.15	-4 +140	-20 +60	Side	Lemo-00	1GC0422	1/5
	MT105H*	Standard/High Temp	10	7.5	0.30	1.2-30	0.047-1.18	+32 +932	0 +500	Top	Lemo-00	1GC0422	1/5
	MT509H*	Standard/High Temp	5	11.5	0.45	2-200	0.079-7.87	+32 +932	0 +500	Top	Microdot	1GC0478 1GC0514 1GC0520	1
	MT211H*	Standard/High Temp	2	16.5	0.65	3-200	0.12-7.87	+32 +932	0 +500	Top	Lemo-00	1GC0422	1/5
	MT506	Fingertips/Normal/ Through Coating	5	7.5	0.30	1.2-225 (Through Coating 5~20)	0.05-8.6 (Through Coating 0.2~0.79)	-4 +140	-20 +60	Side	Microdot	1GC0424	1
	MT506L	Fingertips/Normal/ Through Coating	5	9.5	0.37	1.2-225 (Through Coating 5~20)	0.05-8.6 (Through Coating 0.2~0.79)	-4 +140	-20 +60	Side	Lemo-00	With Cable 1.2m	1
	MT102L	Fingertips/Normal	10	3.0	0.12	1-8	0.04-0.31	-4 +140	-20 +60	Side	Lemo-00	With Cable 1.5m	1/5
	MT105	Fingertips/Normal	10	7.5	0.30	0.8-50	0.03-1.97	-4 +140	-20 +60	Side	Microdot	1GC0424	1/5
	MT105L	Fingertips/Normal	10	7.2	0.28	0.8-50	0.03-1.97	-4 +140	-20 +60	Side	Lemo-00	With Cable 1.5m	1/5
	MT211L	Fingertips/Normal	2	15.5	0.61	2-225	0.079-8.0	-4 +140	-20 +60	Side	Lemo-00	With Cable 1.5m	1/5
Single Crystal	DL-10P6-H	Delayline/Normal	10	7.9	0.31	0.5-14.5	0.02-0.57	-4 +140	-20 +60	Side	Microdot	1GC0423	3
	DL-15P5-H		15	7.9	0.31	0.25-14.5	0.01-0.57	-4 +140	-20 +60	Side	Microdot		
	DL-20P3-H		20	4.8	0.19	0.15-6	0.006-0.24	-4 +140	-20 +60	Side	Microdot		
	P-15P3-H(0°)	Pen type/Normal	15	2.0	0.08	0.5-10	0.02-0.39	-4 +140	-20 +60	Top	Microdot		
	P-15P3-H(45°)		15	2.0	0.08	0.5-10	0.02-0.39	-4 +140	-20 +60	45°Side	Microdot		
	P-15P3-H(90°)		15	2.0	0.08	0.5-10	0.02-0.39	-4 +140	-20 +60	Side	Microdot		
	MTN506	Standard/Normal	5	9.0	0.35	3-50	0.12-1.97	-4 +140	-20 +60	Side	Microdot		
	MTN510		5	14.0	0.55	3-75	0.12-2.95	-4 +140	-20 +60	Side	Microdot		
	MTN513		5	17.0	0.67	3-250	0.12-9.84	-4 +140	-20 +60	Side	Microdot		
	MTN106		10	9.0	0.35	3-25	0.12-0.98	-4 +140	-20 +60	Side	Microdot		
	MTN101		10	14.0	0.55	3-50	0.12-1.97	-4 +140	-20 +60	Side	Microdot		

* Contact for 10 seconds and cool to ambient temperature for reuse.Technical specifications are subject to change without notice.

Contact - High Temperature Delay Line Probes

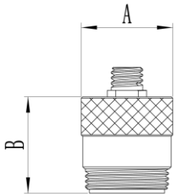
Single crystal probe with a replaceable delay line, applied for high temperature detection environment.

Applications

- Intermittent contact detection with high temperature workpiece (castings, forgings etc.)
- Direct flaw detection
- Detection of curved surface of workpiece

Features

- Supply 0° (ZH type) longitudinal incidence and 45°/ 60°/70° (AH type) shear wave incidence delay lines
- Supply 13 / 25 / 38mm three ZH types standard height delay lines, and 45°/60°/70° three shear wave AH types delay lines
- Two types of delay lines:
  HT1: maximum 20seconds on workpiece at 200 ℃(392 ℉)
  HT2: maximum 10seconds on workpiece at 300 ℃(572 ℉)
- Quick change structure of delay line and probe
- Standard lengths of ZH type delay line matching with probes:
  Φ10 mm (0.375 in) crystal probe with 13 mm (0.5 in) delay line
  Φ13/19 mm (0.5/0.7 in) crystal probe with 25 mm (1.0 in) delay line
- Probe face can be processed into different shapes to ensure good coupling with workpiece
- Top mounting Microdot (L5) connector



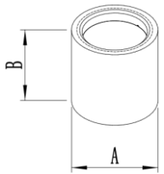
Probe Dimensions					
Nominal Element Size		A		B	
mm	in	mm	in	mm	in
6	0.25	11	0.42	14	0.56
10	0.375	14	0.55	15	0.58
13	0.50	18	0.70	17	0.65
19	0.75	25	0.98	20	1.00

Attention:

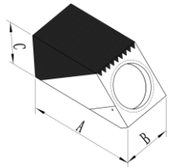
1. When reach maximum contact time, probe is required to cool down to room temperature to working again.
2. The contact time is related to the contact temperature. For the specific relationship between them, please consult with Doppler transducer expert.

Probe Specification				
Frequency	Nominal Element Size		Model	Threads
MHz	mm	in	PL	in
2.25	6	0.25	HT-2.25P6	3/8-32
2.25	10	0.375	HT-2.25P10	1/2-28
2.25	13	0.50	HT-2.25P13	5/8-24
2.25	19	0.75	HT-2.25P19	1-20
5	6	0.25	HT-5P6	3/8-32
5	10	0.375	HT-5P10	1/2-28
5	13	0.50	HT-5P13	5/8-24
5	19	0.75	HT-5P19	1-20

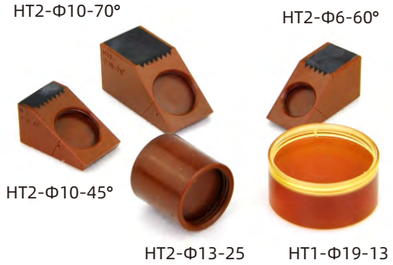
Type	TEMP(℃/℉)/Max Operation Time	
	HT1	HT2
ZH	(170℃/ 338℉) /10	(500℃/ 932℉) /10
AH	(130℃/ 266℉) /10	(270℃/ 518℉) /10



ZH Type



AH Type



ZH Type Delay Line Dimensions							
Model	A		B		Threads	Nominal Element Size	
	mm	in	mm	in	in	mm	in
HT1-Φ10-13	15	0.60	13	0.50	1/2-28	10	0.375
HT1-Φ10-25	15	0.60	25	1.00	1/2-28		
HT1-Φ10-38	15	0.60	38	1.50	1/2-28		
HT1-Φ13-13	18	0.70	13	0.50	5/8-24	13	0.5
HT1-Φ13-25	18	0.70	25	1.00	5/8-24		
HT1-Φ13-38	18	0.70	38	1.50	5/8-24		
HT1-Φ19-13	28	1.10	13	0.50	1-20	19	0.75
HT1-Φ19-25	28	1.10	25	1.00	1-20		
HT1-Φ19-38	28	1.10	38	1.50	1-20		
HT2-Φ10-13	15	0.60	13	0.50	1/2-28	10	0.375
HT2-Φ10-25	15	0.60	25	1.00	1/2-28		
HT2-Φ10-38	15	0.60	38	1.50	1/2-28		
HT2-Φ13-13	18	0.70	13	0.50	5/8-24	13	0.5
HT2-Φ13-25	18	0.70	25	1.00	5/8-24		
HT2-Φ13-38	18	0.70	38	1.50	5/8-24		
HT2-Φ19-13	28	1.10	13	0.50	1-20	19	0.75
HT2-Φ19-25	28	1.10	25	1.00	1-20		
HT2-Φ19-38	28	1.10	38	1.50	1-20		

6mm (0.25in) AH Type Delay Line Dimensions											
Model	β (°)	A		B		C		Threads	Nominal Element Size	
	Steel	mm	in	mm	in	mm	in	in	mm	in
HT1-Φ6-45°	45	19.1	0.75	11.4	0.45	9.4	0.37	3/8-32	6	0.25
HT1-Φ6-60°	60	21.3	0.84	11.4	0.45	11.2	0.44	3/8-32		
HT1-Φ6-70°	70	25.4	1.00	11.4	0.45	12.7	0.50	3/8-32		
HT2-Φ6-45°	45	19.1	0.75	11.4	0.45	9.4	0.37	3/8-32		
HT2-Φ6-60°	60	21.3	0.84	11.4	0.45	11.2	0.44	3/8-32		
HT2-Φ6-70°	70	25.4	1.00	11.4	0.45	12.7	0.50	3/8-32		

10mm (0.375in) AH Type Delay Line Dimensions											
Model	β (°)	A		B		C		Threads	Nominal Element Size	
	Steel	mm	in	mm	in	mm	in	in	mm	in
HT1-Φ10-45°	45	22.6	0.89	14	0.55	11.9	0.47	1/2-28	10	0.375
HT1-Φ10-60°	60	26.4	1.04	14	0.55	14	0.55	1/2-28		
HT1-Φ10-70°	70	30.2	1.19	14	0.55	14.7	0.58	1/2-28		
HT2-Φ10-45°	45	22.6	0.89	14	0.55	11.9	0.47	1/2-28		
HT2-Φ10-60°	60	26.4	1.04	14	0.55	14	0.55	1/2-28		
HT2-Φ10-70°	70	30.2	1.19	14	0.55	14.7	0.58	1/2-28		

13mm (0.5in) AH Type Delay Line Dimensions											
Model	β (°)	A		B		C		Threads	Nominal Element Size	
	Steel	mm	in	mm	in	mm	in	in	mm	in
HT1-Φ13-45°	45	26.7	1.05	17.8	0.70	14	0.55	5/8-24	13	0.5
HT1-Φ13-60°	60	31.5	1.24	17.8	0.70	16.3	0.64	5/8-24		
HT1-Φ13-70°	70	35.8	1.41	17.8	0.70	17.3	0.68	5/8-24		
HT2-Φ13-45°	45	26.7	1.05	17.8	0.70	14	0.55	5/8-24		
HT2-Φ13-60°	60	31.5	1.24	17.8	0.70	16.3	0.64	5/8-24		
HT2-Φ13-70°	70	35.8	1.41	17.8	0.70	17.3	0.68	5/8-24		

Immersion - Immersion Probes

Probe is design for total or partial immersion into water or other liquids to create ultrasonic beams.

Features

- Strong pressure and corrosion resistance
- Excellent acoustic impedance in water or other liquids, 1/4 wavelength of matching layer can ensure maximum power outputs
- No coupling issues between probe and liquid
- Acoustic beam can perform spherical focusing (F) or line focusing (CF), to increase ability of defect identifications
- Three types of performance probes can meet most of detection needs

"PL" Universal Series, "PH" Short Pulsing Series, "C" Composite Series

Applications

- Unfocused probes (planar) are used for general applications and penetrating thicker materials
- Point focused probe (spherical surface) is generally used to improve the sensitivity and signal-to-noise ratio of small flaw defection
- Line focused probe (cylindrical surface) is generally used for the detection of pipes and bars
- Online thickness measurement; Automatic scanning; Material analysis; Imaging system

Instruction :

1. Most water immersion probes working between - 10 ~ 55 ° C (14 ~ 131 ° f). If the temperature exceeds the limit, peeling will occur between components, resulting in permanent damage to the probe. Limit working temperature (customized) can reach -55 ~ 120 ° C (- 67 ~ 248 ° f).
2. Transducers should not be submerged for periods exceeding 8 hours. Allow 16 hours of dry time to ensure the life of the unit.
3. The focusing distance of the unfocused probe is about equal to its near-field length. Since the last maximum amplitude of the probe occurs at a distance equivalent to the near-field length, all probes cannot focus when it is greater than the near-field length.
4. At a given frequency and element size, the focal length of the probe is limited. The actual maximum amplitude of unfocused probe is about 0.6 times of the near-field length, and that of point focused probe is about 0.8 times of the near-field length, for line focused probe max amplitude may not correspond to the nominal focusing. When the focus probe exceeds the above maximum but less than the near-field length, the increased sensitivity at the focus is not obvious.
5. For the problem of the long focus length transducer has a large offset in the center frequency near the focus point, please refer to the description on the probe test report.

European Standard - I1

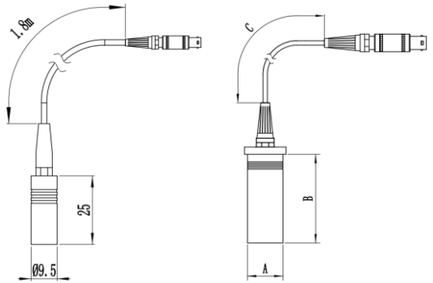
- Top mounting with 1.8 meter or 2.5 meter cable length, cable end with Lemo 01 (C9) connector

Probe Specification									
Frequency	Nominal Element Size		Model			Focal Range			
						Min		Max	
MHz	mm	in	PL	PH	C	mm	in	mm	in
1	20	0.79	I1-1P20	I1-1P20-H	I1-1C20	32	1.26	50	1.97
2	10	0.39	I1-2P10	I1-2P10-H	I1-2C10	18	0.71	25	0.98
	20	0.79	I1-2P20	I1-2P20-H	I1-2C20	30	1.18	85	3.35
4	10	0.39	I1-4P10	I1-4P10-H	I1-4C10	22	0.87	45	1.77
	20	0.79	I1-4P20	I1-4P20-H	/	45	1.77	180	7.09
5	5	0.20	I1-5P5	I1-5P5-H	I1-5C5	11	0.43	20	0.79
	10	0.39	I1-5P10	I1-5P10-H	I1-5C10	20	0.79	55	2.17
10	5	0.20	I1-10P5	I1-10P5-H	I1-10C5	12	0.47	38	1.50
	10	0.39	I1-10P10	I1-10P10-H	/	15	0.59	100	3.94
15	5	0.20	/	I1-15P5-H	/	12	0.47	35	1.38

Probe Dimensions	
Nominal Element Size	
mm	in
5	0.20

Probe Dimensions								
Nominal Element Size		A		B		C		
mm	in	mm	in	mm	in	m	ft	
10	0.39	13	0.51	62	2.44	2.5	8.2	
20	0.79	24	0.94	62	2.44	2.5	8.2	

(a) (b)

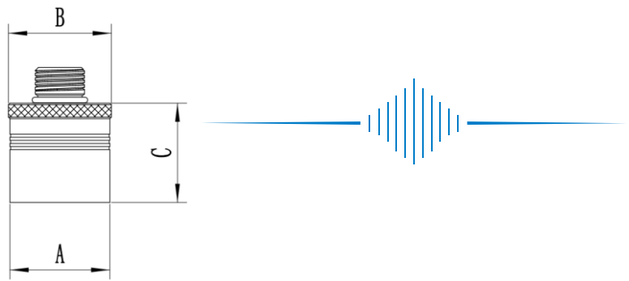


(a) (b)

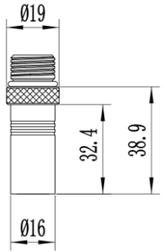
North America Standard - I2

- Top mounting UHF waterproof connector

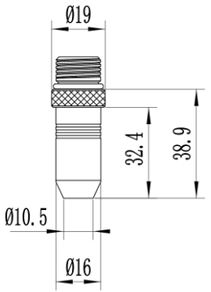
Probe Dimensions							
Nominal Element Size		A		B		C	
mm	in	mm	in	mm	in	mm	in
19	0.75	25	1.00	27	1.06	32	1.25
25	1.00	32	1.25	34	1.32	32	1.25
29	1.125	35	1.38	37	1.44	32	1.25
38	1.50	44	1.75	46	1.81	38	1.50



Nominal Element Size	
mm	in
10	0.38
13	0.50



Nominal Element Size	
mm	in
3	0.13
6	0.25



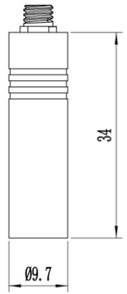
Probe Specification									
Frequency	Nominal Element Size		Model			Focal Range			
						Min		Max	
MHz	mm	in	PL	PH	C	mm	in	mm	in
0.5	19	0.75	/	I2-0.5P19-H	/	25	0.98	25	0.98
	25	1.00	I2-0.5P25	I2-0.5P25-H	/	35	1.38	42	1.65
	29	1.125	I2-0.5P29	I2-0.5P29-H	/	40	1.57	52	2.05
	38	1.50	I2-0.5P38	I2-0.5P38-H	/	60	2.36	95	3.74
1	13	0.50	I2-1P13	I2-1P13-H	/	16	0.63	20	0.79
	19	0.75	I2-1P19	I2-1P19-H	I2-1C19	30	1.18	45	1.77
	25	1.00	I2-1P25	I2-1P25-H	/	48	1.89	75	2.95
	29	1.125	I2-1P29	I2-1P29-H	/	55	2.17	90	3.54
	38	1.50	I2-1P38	I2-1P38-H	/	70	2.76	190	7.48
2.25	6	0.25	I2-2.25P6	I2-2.25P6-H	I2-2.25C6	10	0.39	12	0.47
	10	0.375	I2-2.25P10	I2-2.25P10-H	I2-2.25C10	20	0.79	27	1.06
	13	0.50	I2-2.25P13	I2-2.25P13-H	I2-2.25C13	25	0.98	45	1.77
	19	0.75	I2-2.25P19	I2-2.25P19-H	/	32	1.26	95	3.74
	25	1.00	I2-2.25P25	I2-2.25P25-H	/	55	2.17	160	6.30
	29	1.125	I2-2.25P29	I2-2.25P29-H	/	62	2.44	200	7.87
	38	1.50	/	I2-2.25P38-H	/	70	2.76	370	14.57
3.5	6	0.25	I2-3.5P6	I2-3.5P6-H	I2-3.5C6	12	0.47	17	0.67
	10	0.375	I2-3.5P10	I2-3.5P10-H	I2-3.5C10	20	0.79	38	1.50
	13	0.50	I2-3.5P13	I2-3.5P13-H	/	22	0.87	65	2.56
	19	0.75	I2-3.5P19	I2-3.5P19-H	/	40	1.57	150	5.91
	25	1.00	I2-3.5P25	I2-3.5P25-H	/	50	1.97	270	10.63
	29	1.125	/	I2-3.5P29-H	/	80	3.15	360	14.17
5	6	0.25	I2-5P6	I2-5P6-H	I2-5C6	12	0.47	25	0.98
	10	0.375	I2-5P10	I2-5P10-H	I2-5C10	20	0.79	55	2.17
	13	0.50	I2-5P13	I2-5P13-H	I2-5C13	22	0.87	100	3.94
	19	0.75	I2-5P19	I2-5P19-H	/	40	1.57	210	8.27
	25	1.00	I2-5P25	I2-5P25-H	/	60	2.36	350	13.78
	29	1.125	/	I2-5P29-H	/	80	3.15	420	16.54
7.5	6	0.25	I2-7.5P6	I2-7.5P6-H	I2-7.5C6	15	0.59	30	1.18
	10	0.375	I2-7.5P10	I2-7.5P10-H	/	18	0.71	40	1.57
	13	0.50	I2-7.5P13	I2-7.5P13-H	/	25	0.98	80	3.15
	19	0.75	/	I2-7.5P19-H	/	27	1.06	220	8.66
	25	1.00	/	I2-7.5P25-H	/	80	3.15	530	20.87
	29	1.125	/	I2-7.5P29-H	/	100	3.94	600	23.62
10	6	0.25	I2-10P6	I2-10P6-H	/	13	0.51	40	1.57
	10	0.375	I2-10P10	I2-10P10-H	/	15	0.59	100	3.94
	13	0.50	/	I2-10P13-H	/	25	0.98	120	4.72
	19	0.75	/	I2-10P19-H	/	30	1.18	370	14.57
	25	1.00	/	I2-10P25-H	/	60	2.36	470	18.50
	29	1.125	/	I2-10P29-H	/	90	3.54	580	22.83
15	6	0.25	/	I2-15P6-H	/	13	0.51	40	1.57
	10	0.375	/	I2-15P10-H	/	20	0.79	120	4.72
	13	0.50	/	I2-15P13-H	/	23	0.91	220	8.66
20	3	0.125	/	I2-20P3-H	/	7	0.28	20	0.79
	6	0.25	/	I2-20P6-H	/	14	0.55	60	2.36
25	3	0.125	/	I2-25P3-H	/	10	0.39	23	0.91
	6	0.250	/	I2-25P6-H	/	14	0.55	100	3.94

North America Standard - I3

- 9.7mm (0.375in) outer diameter, suitable for limited detection environment
- Top mounting Microdot (L5) non-waterproof connector

Probe Specification								
Frequency	Nominal Element Size		Model		Focal Range			
					Min		Max	
MHz	mm	in	PL	PH	mm	in	mm	in
2.25	6	0.25	I3-2.25P6	I3-2.25P6-H	10	0.39	12	0.47
3.5	6	0.25	I3-3.5P6	I3-3.5P6-H	11	0.43	17	0.67
5	6	0.25	I3-5P6	I3-5P6-H	12	0.47	25	0.98
10	6	0.25	/	I3-10P6-H	13	0.51	45	1.77
15	3	0.125	/	I3-15P3-H	7	0.28	15	0.59
	6	0.25	/	I3-15P6-H	13	0.51	40	1.57
20	3	0.125	/	I3-20P3-H	8	0.31	22	0.87
25	3	0.125	/	I3-25P3-H	10	0.39	23	0.91

I3-10P6-H

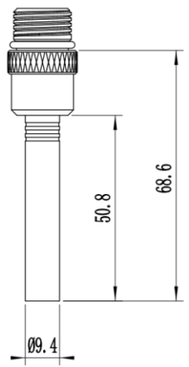


North America Standard - I4

- 9.4mm (0.37in) outer diameter, 51mm (2in) length, suitable for hard to reach detection areas
- Top mounting UHF waterproof connector

Probe Specification								
Frequency	Nominal Element Size		Model		Focal Range			
					Min		Max	
MHz	mm	in	PL	PH	mm	in	mm	in
2.25	6	0.25	I4-2.25P6	I4-2.25P6-H	10	0.39	12	0.47
3.5	6	0.25	I4-3.5P6	I4-3.5P6-H	11	0.43	17	0.67
5	6	0.25	I4-5P6	I4-5P6-H	12	0.47	25	0.98
10	6	0.25	/	I4-10P6-H	13	0.51	45	1.77
15	3	0.125	/	I4-15P3-H	7	0.28	15	0.59
	6	0.25	/	I4-15P6-H	13	0.51	40	1.57
20	3	0.125	/	I4-20P3-H	8	0.31	22	0.87
25	3	0.125	/	I4-25P3-H	10	0.39	23	0.91

I4-10P6-H



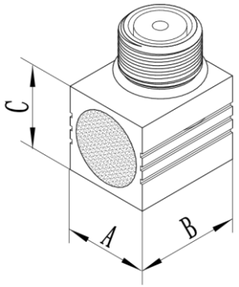
North America Standard - I5

- Cuboid profile, sound wave direction and connector into a 90 degree, for specific application environment
- Top mounting UHF waterproof connector

Probe Specification									
Frequency	Nominal Element Size		Model			Focal Range			
						Min		Max	
MHz	mm	in	PL	PH	C	mm	in	mm	in
1	13	0.50	I5-1P13	I5-1P13-H	I5-1C13	16	0.63	20	0.79
2.25	6	0.25	I5-2.25P6	I5-2.25P6-H	I5-2.25C6	10	0.39	12	0.47
	10	0.375	I5-2.25P10	I5-2.25P10-H	I5-2.25C10	20	0.79	27	1.06
	13	0.50	I5-2.25P13	I5-2.25P13-H	I5-2.25C13	25	0.98	45	1.77
3.5	6	0.25	I5-3.5P16	I5-3.5P6-H	I5-3.5C6	20	0.79	38	1.50
	10	0.375	I5-3.5P10	I5-3.5P10-H	I5-3.5C10	20	0.79	38	1.50
	13	0.50	I5-3.5P13	I5-3.5P13-H	I5-3.5C13	22	0.87	65	2.56
5	6	0.25	I5-5P6	I5-5P6-H	I5-5C6	12	0.47	25	0.98
	10	0.375	I5-5P10	I5-5P10-H	I5-5C10	20	0.79	55	2.17
	13	0.50	I5-5P13	I5-5P13-H	I5-5C13	22	0.87	100	3.94
10	6	0.25	/	I5-10P6-H	/	13	0.51	45	1.77
	10	0.375	I5-10P10	I5-10P10-H	/	15	0.59	100	3.94
	13	0.50	I5-10P13	I5-10P13-H	/	25	0.98	120	4.72

I5-3.5P10

Probe Dimensions							
Nominal Element Size		A		B		C	
mm	in	mm	in	mm	in	mm	in
6	0.25	19	0.75	24	0.94	19	0.75
10	0.375						
13	0.50						



High Frequency Probes

High frequency probe refers to a single element transducer with a frequency higher than 20MHz, which includes HF contact probe, HF immersion probe and HF immersion self - focusing probe.

Features

- Both contact probes and immersion probes have integrated delay lines, and self - focusing immersion probes do not have delay lines or lens
- The frequency range is 20 ~ 50MHz
- With broadband and narrow pulse performance, the probe has excellent near surface resolution and vertical and horizontal resolution
- A very small focal spot diameter in the near field or focus point
- Side mounted microdot connector for contact probe by default, and top mounted UHF interface for immersion probe and immersion self-focusing probe by default

Applications

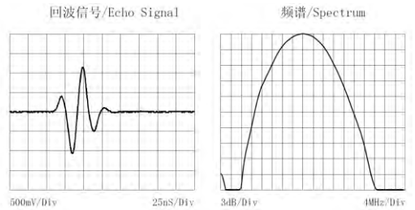
- Minor cracks on the surface
- High resolution detection effect is required, such as the ability to find small cracks or pores
- With the ideal surface condition, temperature and excitation setting, the thinnest thickness that 50MHz probe can reach in steel is 0.05 mm (0.0019 in) in thickness measurement mode
- Scanning acoustic microscope

Direct Contact Type				
Frequency	Nominal Element Size		Delay Time	Model
MHz	mm	in	μs	
20	6	0.25	4.25	HFN20V6-4
30	6	0.25	4.25	HFN30V6-4
50	6	0.25	4.25	HFN50V6-4

Liquid Immersion Type				
Frequency	Nominal Element Size		Delay Time	Model
MHz	mm	in	μs	
20	6	0.25	4.25	HFI20V6-4
30	6	0.25	4.25	HFI30V6-4
50	6	0.25	4.25	HFI50V6-4

Liquid Immersion Self - Focusing Type("**" Custom Length)				
Frequency	Nominal Element Size		Self-Focal Length	Model
MHz	mm	in	mm/in	
20	3	0.125	Custom	HFI20V3BCF**
	6	0.25		HFI20V6BCF**
30	3	0.125		HFI30V3BCF**
	6	0.25		HFI30V6BCF**
50	3	0.125		HFI50V3BCF**

Signal & Spectrum



Probes for Custom and Specific Applications

From the beginning of Doppler, it has always been our advantage to provide customers with custom and special probes design,and leading the probe technique frontiers. To understand customers'demands and application requests, our experienced application engineers, probe design experts work together with our customers, using the best way to provide perfect application solutions and product designs, to meet & satisfy the demands of challenging ultrasonic market.

Low frequency nomal probe

The frequency of these probes is usually between 0.05 ~ 0.25MHz. The ultra-low frequency ensures good penetration and signal-to-noise ratio in some attenuation materials such as stone, wood, rubber and concrete.

Hollow focusing probe

Polymer thin film element makes annular self focusing a reality. In the application of imaging system, the probe is used to receive laser beam.

LW + SW dual waveforms probe

The probe has two channels, which excite SW and LW respectively, it is used for the measurement of material parameters, such as elastic modulus, shear modulus, Poisson's ratio and sound velocity.

LW angle probe

The angles of LW angle probe can be 45 ° / 60 °/ 70 °. Compared with the traditional designed probe, this probe has almost no interference of initial blind area in detection.

Dual creeping wave focusing probe

Used for the detection of pillar ceramic insulator materials in power industry.

Plate wave probe

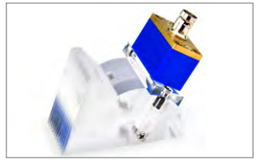
Used to generate plate waves in thin plates.

Low temperature thickness probe

The probe can be used for measuring the thickness of ice layer, and the limit working temperature can reach - 55 ° C (- 67 ° F).

Water wedge dual element probe

The probe is used to detect PE pipes. The traditional solid wedge is replaced by liquid. Sound wave propagates through the liquid and focuses in the PE pipe for detection.



Variable angle probe

Used for measuring the angle and performance before finalizing products, and the angle is adjustable from 0 ~ 90 °.

1T3R steel plate inspection probe

For automatic detection of steel plate in iron and steel industry.

High frequency immersion probe

With a frequency of 20MHz and short pulsing performance, it is used for some special areas that are difficult to deeply penetrate.

Special immersion probe

15MHz, short pulsing performance, and housing sizes are only ϕ 5 × 5mm. Cooperate with specific probe holder, it can detect the thickness of metal pipe (≤ 0.5mm) during high-speed rotation.

Special probe with handle

Used in limited detection space, such as turbine blade, the front part of the probe can bend 180 °, which improves the contact with the workpiece in a tight space.

High temperature resistant dual probe

The probe is used for flaw detection of high-temperature workpiece and can withstand 300 ℃ (572 ℉).

Aluminum measurement angle probe

This probe is used for welding inspection of aluminum materials.

Special probe with guide rail slot

The front end of the probe is equipped with guide rail slot, can be used for axial and circumferential flaw detection of pipes or bars, ensuring the vertical incidence of sound beam, and no need curvatures at the bottom of the probe.

Hollow shaft detection probe

This series of probes are used to detect rail and the hollow shaft connecting rod of wheels in the railway industry.

High frequency water filling probe

The working mode of the probe is liquid immersion type. Liquid is injected through the side water pipe, realizing good coupling between the transparent conical tube and workpiece.

Special dual element straight probe

This probe is dedicated to automatic inspection systems for steel plates.

Wheeled industrial probe

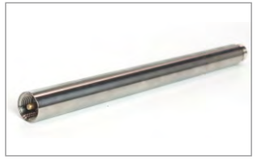
This probe with rolling tires can be used for workpiece inspection such as flat plates, special-shaped workpiece, etc.

T1R2 critical angle probe

This probe is designed for stress detection.

I2 immersion probe mirror

This mirror is used to guide the sound beam by 90° refraction.



I2 immersion probe extension rod

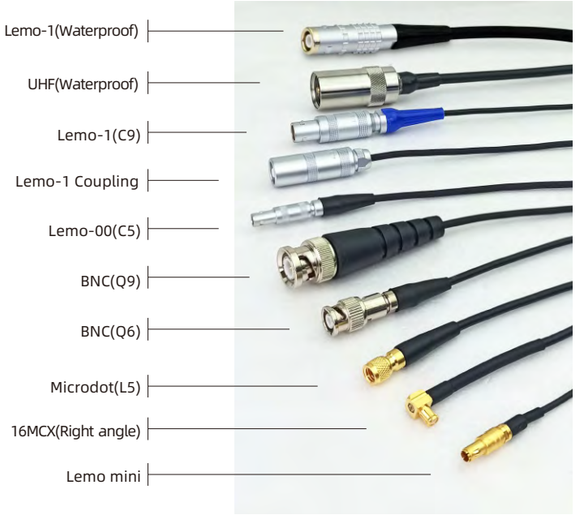
This extension rod can be used for UHF-interfaced immersion probe extensions.

System matching probe

The high-speed rotating probes are applied in the automatic detection system for steel pipe flaw detection and thickness measurement.

Cables

The probe cable is composed of a coaxial cable (wire + insulating layer + shielding network) and two connectors respectively connecting the probe and the instrument, which is used for electrical signal transmission between instrument and probe. Commonly used connectors include BNC (Q9), Microdot (L5), Lemo-00 (C5), Lemo-1 (C9), etc. Coaxial cable include RG174, RG178, RG 316, RG58, etc. Unless specified, the impedance value of all cables is 50 ohms.



- "A" and "B" represent the interfaces at the two ends of the cable respectively
- Cable length can be customized
- Customize special cables available
- * Indicates that the cable is the original Lemo connector

Cable No.	Code	Connector Type A	Connector Type B	Cable	Length (m/ft)
Single	1GC0017	BNC(Q9)	BNC(Q9)	RG174	1.8 / 6
	1GC0016	BNC(Q9)	BNC(Q6)	RG174	1.8 / 6
	1GC0013 1GC0450 *	BNC(Q9)	Lemo-00(C5)	RG174	1.8 / 6
	1GC0015 1GC0441 *	BNC(Q9)	Lemo-1(C9)	RG174	1.8 / 6
	1GC0451	BNC(Q9)	Lemo-1(Waterproof)	RG58	1.8 / 6
	1GC0452	BNC(Q9)	Lemo-1 Coupling	RG174	1.8 / 6
	1GC0453	BNC(Q9)	Lemo mini	RG178	1.5 / 4.9
	1GC0018	BNC(Q9)	Microdot(L5)	RG174	1.8 / 6
	1GC0502	BNC(Q9)	UHF(Waterproof)	RG58	1.8 / 6
	1GC0455	BNC(Q9)	16MCX(Right angle)	RG174	1.8 / 6
	1GC0007 1GC0456 *	Lemo-1(C9)	Lemo-1(C9)	RG174	1.8 / 6
	1GC0457	Lemo-1(C9)	Lemo-1(Waterproof)	RG58	1.8 / 6
	1GC0458	Lemo-1(C9)	Lemo-1 Coupling	RG174	1.8 / 6
	1GC0006 1GC0442 *	Lemo-1(C9)	Lemo-00(C5)	RG174	1.8 / 6
	1GC0008 1GC0443 *	Lemo-1(C9)	Microdot(L5)	RG174	1.8 / 6
	1GC0500 1GC0501 *	Lemo-1(C9)	UHF(Waterproof)	RG58	1.8 / 6
	1GC0460	Lemo-1(C9)	Lemo mini	RG178	1.5 / 4.9

Cable No.	Code	Connector Type A	Connector Type B	Cable	Length (m/ft)
Single	1GC0001 1GC0461 *	Lemo-00(C5)	Lemo-00(C5)	RG174	1.8 / 6
	1GC0002 1GC0319 *	Lemo-00(C5)	Microdot(L5)	RG174	1.8 / 6
Dual	1GC0089	BNC(Q9) x2	BNC(Q9) x2	RG174	1.8 / 6
	1GC0039	BNC(Q9) x2	BNC(Q6) x2	RG174	1.8 / 6
	1GC0027 1GC0462 *	BNC(Q9) x2	Lemo-00(C5) x2	RG174	1.8 / 6
	1GC0155 1GC0463 *	BNC(Q9) x2	Lemo-1(C9) x2	RG174	1.8 / 6
	1GC0028	BNC(Q9) x2	Microdot(L5) x2	RG174	1.8 / 6
	1GC0464	BNC(Q9) x2	Lemo mini x2	RG178	1.5 / 4.9
	1GC0152 1GC0465 *	Lemo-1(C9) x2	Lemo-1(C9) x2	RG174	1.8 / 6
	1GC0024 1GC0466 *	Lemo-1(C9) x2	Lemo-00(C5) x2	RG174	1.8 / 6
	1GC0025 1GC0467*	Lemo-1(C9) x2	Microdot(L5) x2	RG174	1.8 / 6
	1GC0468	Lemo-1(C9) x2	Lemo mini x2	RG178	1.5 / 4.9
	1GC0122 1GC0469 *	Lemo-00(C5) x2	Lemo-00(C5) x2	RG174	1.8 / 6
	1GC0106 1GC0470 *	Lemo-00(C5) x2	Microdot(L5) x2	RG174	1.8 / 6

Adapters

The adapter can achieve fast switching between different instruments, probes, and connecting wires.

Model	Interface Type
3BQ0021	BNC Male— BNC Male
3BQ0022	BNC Male — BNC Female (right angle)
3BQ0023	BNC Male —SMA Female
3BQ0024	BNC Male —Microdot Female
3BQ0025	BNC Male —Lemo00 Female
3BQ0026	BNC Male —UHF Female
3BQ0027	BNC Female —UHF Male
3BQ0028	BNC Female —BNC Female
3BQ0030	BNC Female —Lemo00 Male
3BQ0031	UHF Male — UHF Female (right angle)
3BQ0032	UHF Female — UHF Female
3BQ0033	BNC Male — 2×BNC Female


3BQ0021


3BQ0022


3BQ0023


3BQ0024


3BQ0025


3BQ0026


3BQ0027


3BQ0028


3BQ0030


3BQ0031


3BQ0032


3BQ0033

Ultrasound Probes for Medical and Research

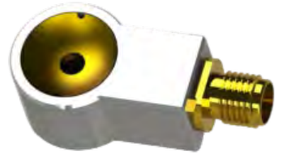
ULTRASOUND PROBES for medical and research

With more than a decade of experience in the design and manufacture of custom ultrasound probes, from individual individual customization to high-volume production, we have developed many know-how and manufacturing processes, and provide high-performance solutions for a wide range of innovative applications.

Receiver Probe Series

Features

- For receiving and organizing ultrasonic signals in photoacoustic / thermoacoustic imaging
- Optimize receiving bandwidth
- Optimize electromagnetic shielding



Power Probe Series

Features for Single Element

- Frequency: 0.5-10MHz
- Aperture: 1-120mm
- Focusing number: F > 0.5
- Sound intensity in focal area > 5000W / cm ²
- High efficiency, low heating, allowing continuous wave excitation
- Customized mechanical structure, lead and MRI compatible

Power Ultrasonic Laterally Focused Probe

Features for Array Probe

- Frequency: 0.5-3MHz
- The array configuration includes linear array, circular array, matrix and multi-channel array
- Array element arrangement includes periodic, aperiodic, random array and customized arrangement

Power Unit Probe Model Description

TP	1	P	64	BF64	-	1.5	-	BNC
Code	Frequency	Crystal	Transmitting Aperture	Focusing		Cable Length		Connector Model

Code	TP=metal casing, TPM=plastic casing (MRI compatible)
Frequency	1=1MHz (recommended 0.5-10 MHZ)
Crystal Type	P=ceramic, C=composite material
Transmitting Aperture	64=64mm (recommended 1-120mm)
Focusing	Focusing number F>0.5 (BF64 refers to a spherical surface with a radius of 64mm on the chip's emitting surface; NF refers to no geometric focusing)
Cable Length	1.5=1.5m (the default cable line is RG174, omitted if there is no cable)
Connector Model	BNC, SMA ...

Power Array Probe Model Description

HP	-	670K	-	512	-	DE
Code		Frequency		Crystal Numbers		Line Sequence

HP	-	2M	-	16 x 16	-	1.2 x 1.2	-	BE
Code		Frequency		Crystal Numbers		Transmitting Aperture		Line Sequence

Code	HP
Frequency	670 K=670 Khz (recommended 0.5-3 MHZ)
Crystal Numbers	512=512 crystals; 16 × 16=256 crystal matrix
Transmitting Aperture	1.2 x 1.2=1.2mm x 1.2mm square crystal
Line Sequence	DE, BE (wire sequence can be customized according to needs)

Specifications and Dimensions

Models	Frequency (MHZ)	Active Aperture (mm)	Radius (mm)	Dimensions (mm)	Height (mm)	Standard Interface	Cable Length X (mm)	MRI Compatibility
TP0.5P64BF64-X-BNC	0.5	64	64	70	40	BNC	0m or 1.5m	-
TPM1C10BF10-4-BNC	1	10	10	13	16	BNC	4m	Yes
TPM1P10BF10-3-BNC	1	10	10	13	16	BNC	3m	Yes
TP1P24BF24-X-BNC	1	24	24	28	33.5	BNC	0m or 1.5m	-
TP1P64BF64-X-BNC	1	64	64	70	40	BNC	0m or 1.5m	-
TP1P64-ϕ20BF64-X-BNC	1	64(open pore20)	64	70	40	BNC	0m or 1.5m	-
TP1.1P24BF24-X-BNC	1.1	24	24	28	33.5	BNC	0m or 1.5m	-
TP2P24BF24-X-BNC	2	24	24	28	33.5	BNC	0m or 1.5m	-
TP2P64BF64-X-BNC	2	64	64	70	40	BNC	0m or 1.5m	-
TP8P8BF8-X-BNC	8	8	8	11	14	BNC	0m or 1m	-
TP10P6BF6-X-BNC	10	6	6	9	12	BNC	0m or 1m	-

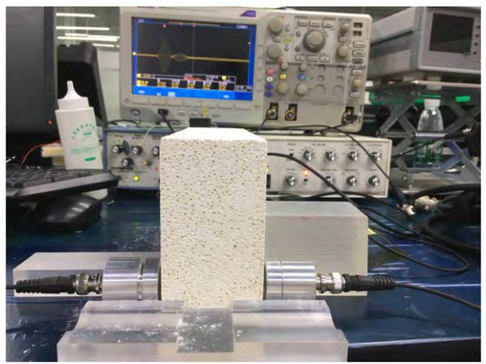
Air-coupling Probes

Features

- Non-contact air coupled ultrasound (ACU)
- High sensitivity and high signal to noise ratio
- Optional 60dB built-in amplifier, the amplifier is USB interface
- Customizable series for focusing and working in water mist environment

Specifications and Dimensions

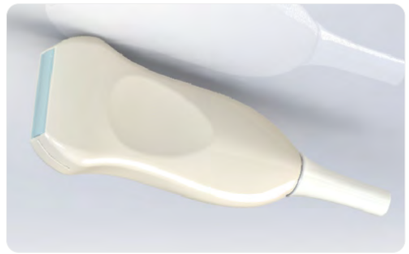
Models	Frequency (KHZ)	Active Aperture (mm)	Focus	Standard Interface	Operating Mode
AB0.25C24NF-T	250	24	NO	BNC	Emission
AB0.25C24NF-R	250	24	NO		Receive
AB0.42C24NF-T	420	24	NO		Emission
AB0.42C24NF-R	420	24	NO		Receive



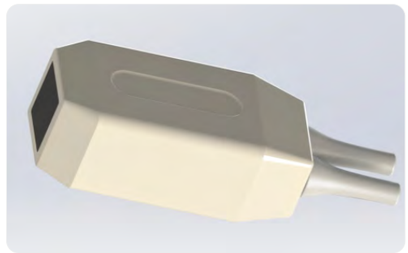
Experiment of 250kHz Air-Coupled Probe
Penetrating 64mm Refractory Brick

Imaging Ultrasound Array Probe

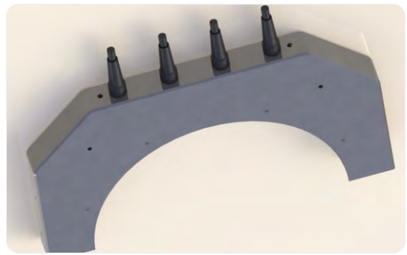
Endoscopic unit imaging probe



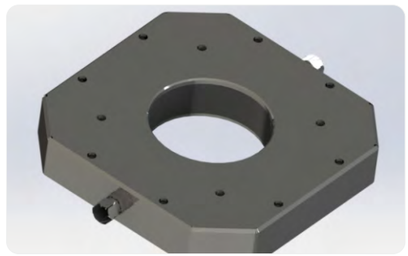
Linear array probe



Matrix probe



Concave array probe



360 ° circular cylindrical array probe

Convex array probe