

Industrial Ultrasonic Crawlers



Super Idea for Ultrasonic Inspection

SIUI

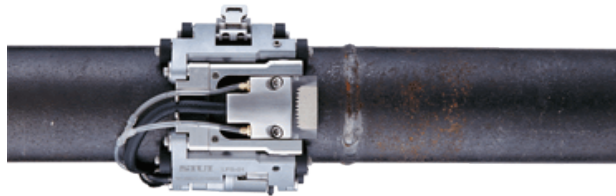


Crawler for Small Pipe Welds

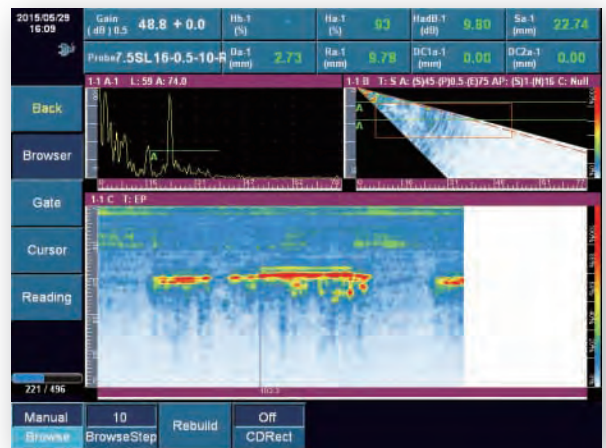
LPS-01 / LPS-02

The Phased Array low profile crawler LPS-01 and LPS-02 are compatible with Phased Array ultrasonic flaw detector, which is used to perform circumferential weld inspection on small diameter pipes.

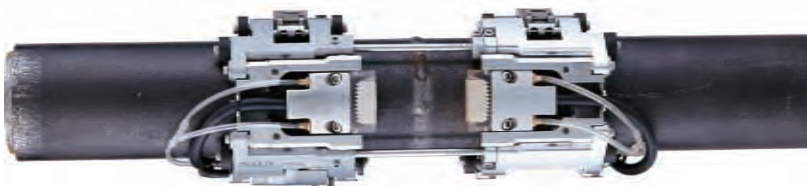
- Compact, lightweight, portable, waterproof and rust-free.
- Probes and wedges can be quickly and easily changed.
- Support up to two phased array probes to cover the whole welds at one time.
- Covers standard pipes with outside diameters ranging from 20.32-114.3mm (0.84-4.5 inch).
- Can be operated within 15mm clearance, perfect for hard-to-reach area inspection.
- Encoder precision: 32.6step/mm
- The probe spacing can be adjusted in the range of 0-55 mm.
- Crawler can provide stable and constant pressure around the pipe full circumference.
- Urethane wheels help the crawler have smooth radial movement along the pipe and reduce axial drift.
- Positive inspection and reverse inspection with high reproducibility and good coupling.
- With its simple buckle design, just easily buckle up and unbuckle the links for different pipe diameters (No need to disassemble the whole scanner).
- Two inspection methods: one-side inspection and dual-side inspection.



LPS-01



- One-side inspection is suitable for elbow, pipe tee and pipe cap of pipe-to-component inspection



LPS-02



- Dual-side inspection is suitable for covering the whole welds at one time of pipe-to-pipe inspection.

Crawler for Small Pipe Welds

Configuration

Typical configuration for dual-side inspection: LPS-02 crawler, two R35E phased array probes with 60°refraction angle AOD wedges, Y splitter, SIUI phased array flaw detector and manual irrigation device.

Standard Accessories		
	LPS-01	LPS-02
System	Phased Array Flaw Detector SynScan or SUPOR	
Scanning Link	Scanning link LPS-01-EN (1 pc) a) Suitable for pipe with OD from 20.32-114.3mm (0.84-4.5 inch) b) Weight (with all links):0.34kg	
	×	Scanning link LPS-01-SP (1 pc) a) With LPS-01-EN to achieve dual-side inspection b) Suitable for pipe with OD from 20.32-114.3mm(0.84-4.5 inch) c) Weight (with all links):0.34kg
Encoder Wheel	Encoder Wheel (1 pc) a) Precision: 32.6 step/mm b) IP: IP68 c) Integrated with connecting wire, with 14-core connector d) Weight: 0.08kg	
Pipe Divider	Pipe Divider (1 pc) a) Specification: Main water pipe: 4 × 2.5mm (OD × ID) Distributed water pipe: 2 × 1.2mm (OD × ID) b) Support up to 2 probes coupling	
Encoder Cable	Fixed with encoder	
Optional Accessories		
	LPS-01	LPS-02
Probes	Low-profile PA probe (1 pc)	Low-profile PA probe (2 pcs)
Wedges	Phased Array wedges (10 pcs)	Phased Array wedges (20 pcs)
Y Splitter	×	Y Splitter for two phased array probes to work simultaneously.
Manual Irrigation Device	Manual Irrigation Device (1 pc) a) Manually pressurized, with adjustable flow valve b) Capacity: 1 L c) With tube: 4 × 2.5mm (OD × ID), 3m length d) Weight: 0.35kg	



Crawler for Small Pipe Welds

Low-profile Phased Array Probe

Probe Model	Frequency	Elements No.	Pitch	Elevation	Elevation Curvature Radius	Corresponding Wedge
	MHz		mm	mm	mm	
5.0SL16-0.5-10-R35E	5	16	0.5	10	35	8R(35)60S4-I-AOD-XX
7.5SL16-0.5-10-R35E	7.5	16	0.5	10	35	8R(35)60S4-I-AOD-XX
10 SL16-0.5-10-R35E	10	16	0.5	10	35	8R(35)60S4-I-AOD-XX

Phased Array Wedge

Wedge Model	Description	L	W	H	Fixed Aperture Diameter
		mm	mm	mm	mm
8R(35)60S4-I-AOD-21	35° -70° shear wave angle block	18	22	15.5	Φ3
8R(35)60S4-I-AOD-26				15.2	
8R(35)60S4-I-AOD-33				15	
8R(35)60S4-I-AOD-42				14.2	
8R(35)60S4-I-AOD-48				13.9	
8R(35)60S4-I-AOD-60				13.4	
8R(35)60S4-I-AOD-73				13	
8R(35)60S4-I-AOD-88				12.9	
8R(35)60S4-I-AOD-101				12.6	
8R(35)60S4-I-AOD-114				12.7	
8R(35)60S4-I				11.7	

● Note: SIUI low-profile probes and wedges are compatible with Cobra from Olympus and Circ-it from Jireh.

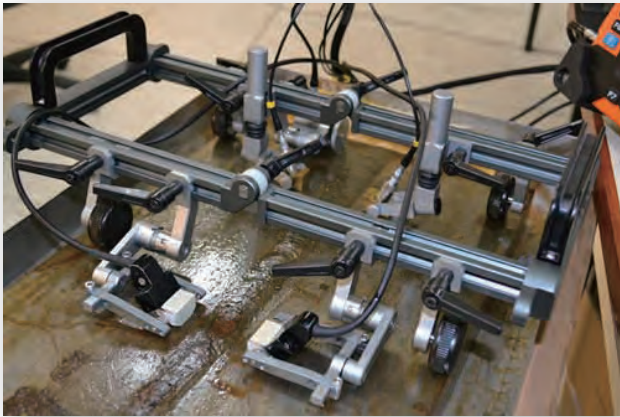
Technical Specification

Basic Parameters		
	LPS-01	LPS-02
Dimension	Height: 15mm Width: 68mm Max. Length (Suitable for 115mm pipe): 375mm	Height: 15mm Min. Width(Wedge Front Distance:0mm): 136mm Max. Width (Wedge Front Distance:55mm): 191mm Max. Length (Suitable for 115mm pipe): 375mm Dual probe wedges front distance: 0-55mm
Weight	0.42kg	0.8kg
Packing Dimension(W×H×D)	440×340×190(mm)	
Scan Method	Manual, single axis scanning	
Encoder Precision	32.6 step/mm	
Encoder IP Code	IP68	
Suitable Tested Work Piece (Pipe)	OD: 20.32-114.3mm(0.84-4.5inch), pipe min. clearance: 15mm	
Working Temperature	0℃-+40℃	
Working Relative Humidity	30%-85%	
Working Atmospheric Pressure	700hPa-1060hPa	

Manual PA and TOFD Crawler

UHTS-X02

Foldable Phased Array & TOFD Crawler



The Phased Array and TOFD crawler UHTS-X02 is compatible with PA or TOFD ultrasonic flaw detector. It can be folded in the center for longitudinal weld and unfolded for girth weld, enabling the crawler have better coupling stability to work on smaller pipes, suitable for PA or TOFD testing on plates, girth weld outside the pipe(diameter no less than 500mm) and longitudinal weld outside the pipe (diameter no less than 600mm).

- ⊕ Standard configured as two channels TOFD crawler
- ⊕ Support Phased Array probes
- ⊕ Support up to 3 pairs of probe holders simultaneously.
- ⊕ The magnetic wheels can be attracted to the tested work piece for easy operation.
- ⊕ Spring guide way structure, which follows the tested surface, maintaining good coupling between the wedge and the tested work piece.



Foldable Structure



Probe Holder



Encoder



Magnetic Wheel

Superior Features

The Phased Array and TOFD crawler UHTS-X02 has up to six combinations to meet different application requirements.

UHTS-X02 Crawler Combinations

Combination 1 (1-channel TOFD)



Work with one pair of TOFD probes for TOFD testing on workpiece with wall thickness less than 50mm.

Combination 2 (2-channel TOFD)






Work with two pairs of TOFD probes for TOFD testing on workpiece with wall thickness less than 100mm.

Combination 3 (One Phased Array Probe)



Work with one Phased Array probe for phased array testing.

Superior Features

UHTS-X02 Crawler Combinations	
Combination 4 (Two PAUT probes)	
	Work with one pair of Phased Array probes for phased array testing.
Combination 5 (Two PAUT probes+1-channel TOFD)	
	Work with one pair of Phased Array probes and one pair of TOFD probes for phased array and TOFD testing.
Combination 6 (Two PAUT probes+2-channel TOFD)	
	Work with one pair of Phased Array probes and two pairs of TOFD probes for phased array and TOFD testing.

*The six combinations support irrigation wedges and non-irrigation wedges.

Application



UHTS-X02 crawler is compatible with flaw detector SUPOR to have simultaneous PA & TOFD inspection, which can greatly increase scanning coverage and provide multiple judgment methods to avoid misjudgment.

Simultaneous Inspection of PA & TOFD Video 

To know more, scan QR code.





Technical Parameters

Item	Description	
Weight	2.3kg	
Dimension(W×H×D)	427mm×270mm×137mm	
Packing Dimension(W×H×D)	530mm×430mm×250mm	
Scan Method	Manual, single axis scanning	
Encoder Connector Type	4-core	
Encoder Precision	9.3 step/mm	
Encoder IP Code	IP68	
Suitable Tested Work Piece	Plate	
	Pipe(girth weld outside)	Diameter ≥500mm
	Pipe(longitudinal weld outside)	Diameter ≥600mm
Working Condition	Temperature	-20℃~+45℃
	Relative Humidity	30%~85%
	Atmospheric Pressure	700hPa~1060hPa

Standard Accessories

Probe Holder	Left probe holder HFL-01	Support non-irrigation wedge
	Right probe holder HFR-01	
	Left probe holder HFL-04	
	Right probe holder HFR-04	

Optional Accessories

Probe Holder	Left probe holder HFL-02	Support irrigation TOFD wedge
	Right probe holder HFR-02	
	Left probe holder HML-02	Support irrigation phased array wedge
	Right probe holder HMR-02	
Probe Holder Arm	Long probe holder arm AB-02	
Auto Irrigation Device	IA-01	
Manual Irrigation Device	IH-01	

Manual PA and TOFD Crawler

PTS-P05

Compact Phased Array & TOFD Crawler



The Phased Array and TOFD crawler PTS-P05 is compatible with PA or TOFD ultrasonic flaw detector. It is suitable for phased array or TOFD testing on plates and pipe workpieces.

- ⊕ The magnetic wheels can be attracted to the work pieces for easy operation.
- ⊕ Spring arm structure, which follows the tested surface, maintaining good coupling between the wedge and the tested work piece.
- ⊕ The probe fixed arm spacing is adjustable, which can be installed with wedges of various specifications to meet specific needs.
- ⊕ The position of the probe holder can be adjusted to the actual testing needs, convenient and flexible.



Turning Arm Adjustment




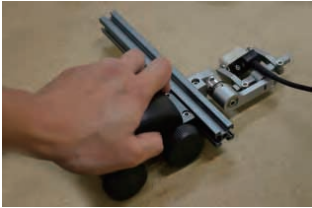

Long beam and short beam



Long probe holder arm and short probe holder arm

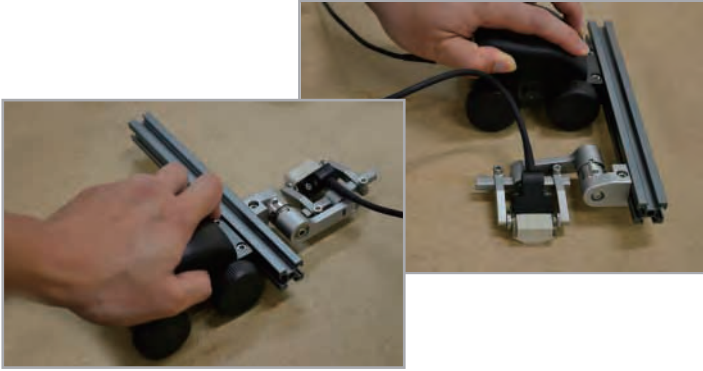
Superior Features

The Phased Array and TOFD crawler PTS-P05 has up to three combinations to meet different application requirements.

PTS-P05 Crawler Combinations	
Combination 1 (1-channel TOFD)	
	Work with one pair of TOFD probes for TOFD testing on plate with wall thickness less than 50mm.
Combination 2 (One PAUT Probe)	
	Work with one PAUT probe for phased array testing on girth weld of pipe (diameter larger than 60mm, length larger than 150mm).
Combination 3 (Two PAUT Probes)	
	Work with two PAUT probes for phased array testing on plate with wall thickness less than 50mm.

*The three combinations support irrigation wedges and non-irrigation wedges.

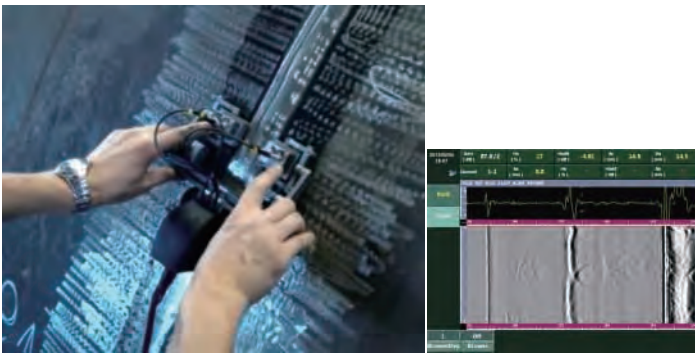
Superior Features



Probe holder can be installed in both side of crawler beam to achieve flexible scanning direction.



Build-in encoder: compact size and water-proof



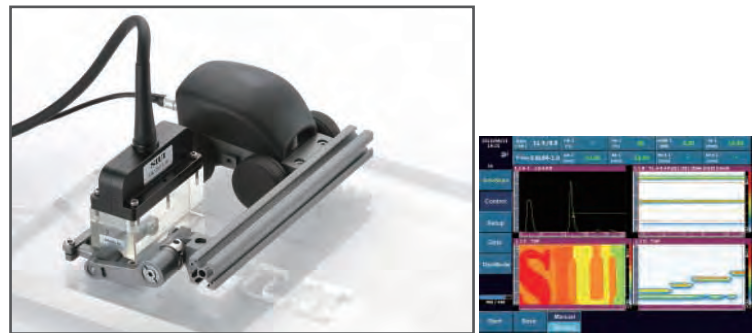
PTS-P05 crawler is working with 1-ch TOFD probes to achieve TOFD inspection on 48mm thick vessel.



PTS-P05 crawler is working with one PAUT probe to achieve phased array inspection on weld.



PTS-P05 crawler is working with two phased array probes to achieve multi-group scanning function to inspect from both sides of the weld, therefore enhancing the inspection efficiency and speed.



PTS-P05 crawler is working with one large-size linear array probe to achieve linear scan on flat panel engraved with SIUI logo.

Technical Parameters



Item	Description	
Weight	1kg	
Dimension(W×H×D)	200mm×73mm×120mm	
Packing Dimension(W×H×D)	440mm×190mm×340mm	
Scan Method	Manual, single axis scanning	
Encoder Connector Type	4-core	
Encoder Precision	2.4 step/mm	
Encoder IP Code	IP66	
Suitable Tested Work Piece	Plate (1-ch TOFD and 2 PA)	
	Pipe (1 PA)	Diameter > 250mm (10")
		Length > 150mm (6")
Working Condition	Temperature	0°C ~ +40°C
	Relative Humidity	30%~85%
	Atmospheric Pressure	700hPa~1060hPa

Standard Accessories

Probe Holder	Left probe holder HML-01
Probe Holder Arm	Long probe holder arm AB-02
Beam	200mm short beam

Optional Accessories

Probe Holder	Right probe holder HMR-01
Probe Holder Arm	Short probe holder arm AB-01
Beam	250mm long beam

Auto Irrigation Device	IA-01	
Manual Irrigation Device	IH-01	

Manual PA Crawler

PES-02

Mini Phased Array Crawler

Phased Array crawler PES-02 is compact, flexible and easy to operate.

It is suitable for phased-array single probe (with wedge) to perform ultrasonic phased-array testing on girth weld or longitudinal weld of flat butt welds, pressure vessels or pipes (diameter > 60mm).

- ⊕ Waterproof (IP68)
- ⊕ Compact size
- ⊕ Aluminum alloy construction: withstand the harshest environments.
- ⊕ High encoder resolution: 19.2 stpes/mm.
- ⊕ Compatible with long and short pivot arms to achieve flexible application.






Butt Weld Inspection



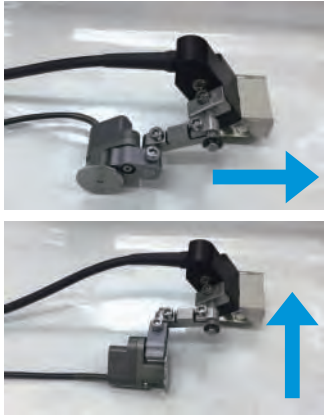
Pipe Inspection

Superior Features

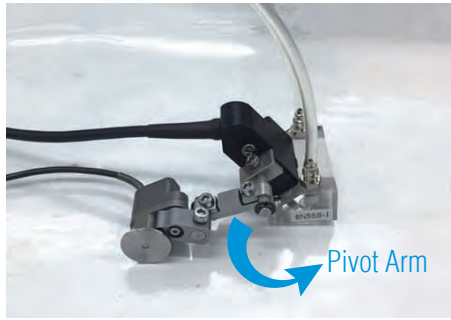
Phased Array crawler PES-02 is compatible with different wedges to inspect butt weld and plates.

PES-02 Crawler Combinations	
Combination 1 (Non-irrigation wedge)	
	Work with non-irrigation wedges to inspect on girth weld or longitudinal weld of flat butt welds (diameter larger than 60mm).
Combination 2 (Irrigation wedge)	
	Work with irrigation wedges to inspect on girth weld or longitudinal weld of flat butt welds (diameter larger than 60mm).
Combination 3 (Large size wedge)	
	Work with large size wedge to inspect on plate

Superior Features



Two direction wheel assemble methods to achieve horizontal welding and longitudinal welding inspection



PES-02 crawler structure



Smaller size to make it perfect for accessing limited space



Technical Parameters

Item	Description	
Weight	0.1kg	
Dimension(W×H×D)	26.5mm×17mm×42mm	
Packing Dimension(W×H×D)	380mm×315mm×130mm	
Scan Method	Manual, single axis scanning	
Encoder Precision	19.2 stpes/mm	
Encoder IP Code	IP68	
Suitable Tested Work Piece	Plate	
	Pipe	Diameter > 60mm
Working Condition	Temperature	0°C ~ +40°C
	Relative Humidity	30%~85%
	Atmospheric Pressure	700hPa~1060hPa

Standard Accessories

Long Turning Arm	Compatible with phased array 20mm wedge and transverse wave wedge
Short Turning Arm	Compatible with phased array 40mm wedge
Encoder Cable	Fixed with encoder

Optional Accessories

Wedge	Phased Array Irrigation Wedge	
	Phased Array Non-irrigation Wedge	
Auto Irrigation Device	IA-01	
Manual Irrigation Device	IH-01	

Manual TOFD Crawler

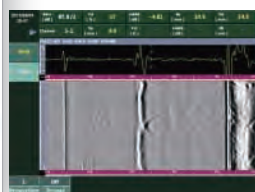
TSB-1-P05 TSB-2-P05



The TOFD crawler TSB-1-P05 and TSB-2-P05 are compatible with TOFD ultrasonic flaw detector as well as TOFD wedges. They are suitable for TOFD testing on plate-type work pieces.

- ⊕ The magnetic wheels can be attracted to the workpiece for easy operation.
- ⊕ Spring guide rail structure, which enables the probe holder to move up and down along the tested surface, maintaining good coupling between the wedge and the tested work piece.
- ⊕ The rolling direction of the wheels is adjustable for transverse scan and vertical scan.

Superior Features



TSB-1-P05 (1-ch TOFD)




TSB-2-P05 (2-ch TOFD)


Technical Parameters

Item	TSB-1-P05	TSB-2-P05
Weight	1.68Kg	2.2Kg
Number of Channel	1	2
Dimension (W×H×D)	300mm×145mm×215mm	450mm×145mm×215mm
Packing Dimension(W×H×D)	440mm×185mm×340mm	610mm×295mm×490mm
Encoder Connector Type	4-core	4-core
Encoder Precision	2.4 step/ mm	2.4 step/ mm
Suitable Tested Work Piece	Plate	Plate
Working Condition	Temperature	0°C~+40°C
	Relative Humidity	30%~85%
	Atmospheric Pressure	700hPa~1060hPa

Irrigation Device

SIUI can provide two kinds of irrigation device: auto irrigation device and manual irrigation device.

Item	IH-01 Manual Irrigation Device	
Description	The IH-01, a manual irrigation device, is used to supply water to irrigation wedges during ultrasonic testing.	
Structure	One set with one 3m polyurethane output tube and one valve	
Pressure Tank Capacity	5L	
Pressure Tank Max. Pressure	0.3MPa	
Output Tube Specification	8mm OD and 5.5mm ID	
Weight	1.5kg	
Dimension(W×H×D)	185mm×185mm×450mm	
Packing Dimension(W×H×D)	195mm×195mm×445mm	

Item	IA-01 Auto Irrigation Device	
Description	The IA-01, an auto irrigation device, is used to supply water to irrigation wedges during ultrasonic testing.	
Structure	One set with one water pump, one filter, 2m input tube, 5m output tube, one adapter and one power supply cord.	
Pump Max. Pressure	0.42MPa	
Max. flow	4.5L/ min	
Input Tube Specification	8mm OD and 5.5mm ID	
Output Tube Specification	8mm OD and 5.5mm ID	
Weight	6.3kg	
Dimension(W×H×D)	426mm×322mm×136mm	
Packing Dimension(W×H×D)	480mm×364mm×188mm	



SIUI

Shantou Institute of Ultrasonic Instruments Co., Ltd.

Add: #77, Jinsha Road, Shantou 515041, Guangdong, China
Tel: +86-754-88250150 **Fax:** +86-754-88251499
E-mail: siui@siui.com **Website:** <http://www.siui.com>



Specifications and appearance are subject to change without prior notice.
DCY2.791.Crawler.CY/6A05