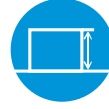


# Industrial Ultrasonic Crawlers



- ✓ Automatic/ Manual
- ✓ 2D/ 2-axis/ Single-axis
- ✓ PA/ TOFD/ UT/ TG
- ✓ Weld/ Corrosion

**SIUI**



# Ultrasonic Crawlers

## Crawler Technical & Application Matrix

Crawler	Inspection Technology				Application	
	UT/TG	PA	TOFD	PA & TOFD	Weld	Corrosion
AUT		●	●	●	●	
CUS-01		●	●		●	●
CPS		●	●	●	●	
LPS		●	●		●	
PTS-P05		●	●		●	●
TSE		●	●	●	●	
UHTS-X02		●	●	●	●	
PES-02	●	●	●		●	●
RWS-P02		●			●	
MPS-01A		●				●
MPS-02		●				●
WPS-01		●				●

## Crawler Feature & Application Range Matrix

Crawler	Feature	Plate	Pipe
Welding Solution			
AUT	Zone discrimination inspection		OD ≥ 500mm (19.69in)
CUS-01	Single-axis automatic motor	✓	OD ≥ 250mm (9.85in)
CPS	Chain crawler		CPS-01: OD1000-1300mm (39.38-51.18in) CPS-02: OD100-1000mm (3.94-39.37in)
LPS	Low profile		LPS-01/02: OD20.32-114.3mm (0.84-4.5in) LPS-07/08: OD100-300mm (3.94-11.81in)
TSE	Expandable	✓	OD ≥ 168mm (6.62in)
PTS-P05	Handheld	✓	OD ≥ 250mm (9.85in)
UHTS-X02	Foldable	✓	Girth: OD ≥ 500mm (19.69in) Longitudinal: OD ≥ 600mm (23.63in)
PES-02	Mini	✓	OD ≥ 60mm (2.37in)
RWS-P02	Tandem Scanning for rail weld	/	/
Corrosion Solution			
CUS-01	Automatic 2-axis	✓	OD ≥ 100mm (3.94in)
MPS-01A	Immersion testing	✓	OD ≥ 100mm (3.94in)
MPS-02	2D scanning	✓	OD ≥ 100mm (3.94in)
WPS-01	With wheel probe	✓	Girth: OD ≥ 200mm (7.88in) Longitudinal: OD ≥ 100mm (3.94in)
PTS-P05	Handheld	✓	OD ≥ 250mm (9.85in)
PES-02	Mini	✓	OD ≥ 60mm (2.37in)

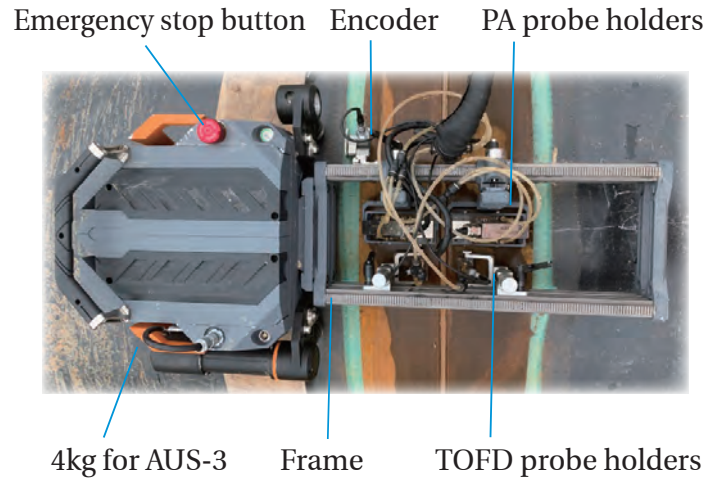
# Automated Ultrasonic Testing

## AUT

Automated ultrasonic testing (AUT) to test pipeline girth welds during pipeline construction has been increasing substantially around the world. For pipelines with girth-welded using automated welding systems, with the AUT system, users can detect and analyze weld defects very quickly.



### Automatic module AUS-03



### Superior Features

- IP65, operation time  $\geq 12$  hours.
- Compatible with 2 PA+1 ch-TOFD probes.
- Typical pipe diameter  $\geq 500\text{mm}$  (19.7in.)
- Typical pipe wall thickness  $\geq 6\text{mm}$  (0.25in.)
- Suitable weld groove: compound U/ V and U, etc.
- Especially suitable for automatic welding interface detection.

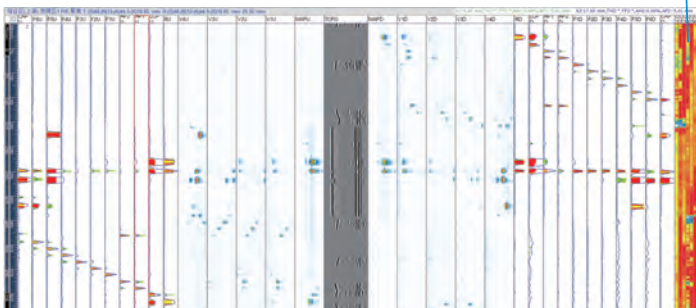


### Zone Discrimination Inspection Technique

Weld is divided into different areas, and the AUT system can use different specific ultrasonic beams to inspect every areas.

In the process of calibration and welds inspection, specific channels will be displayed on SuperUp to monitor the coupling of each PA probe.

#### Monitor coupling



Scanning image on AUT calibration block



Test report

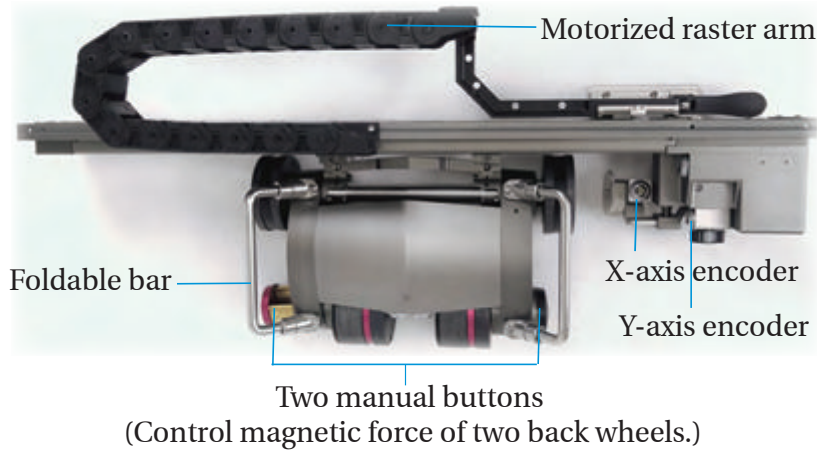


On-site

# Automatic Two-axis Crawler

## CUS-01

CUS-01 is suitable for plate and pipe with OD  $\geq 100$ mm (3.94 inch).

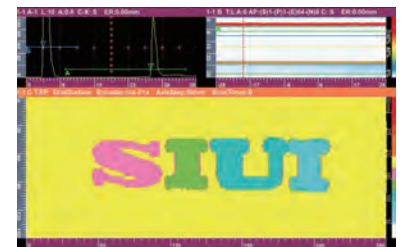


On pipe with OD 100mm

### Superior Features

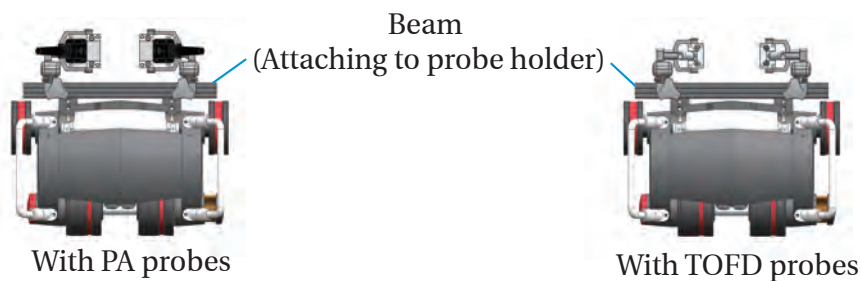
- IP66.
- Variable scan speed: X-axis 0-3.5 m/min; Y-axis 0-4 m/min.
- Encoder precision: X-axis 0.12 mm/step; Y-axis 0.09 mm/step.
- Modular design for easy assembling and disassembling.
- Compatible with different probe holders for various PA/TOFD solutions.

### Automatic 2-axis PA Corrosion Mapping



Test Result

### Automatic Single-axis Weld Inspection



# PA & TOFD Crawler for Medium & Large Pipe Welds



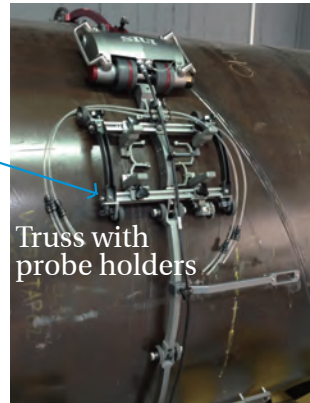
## Superior Features

- IP68.
- Double wheel chains straddle the weld to ensure stabling.
- High-strength aluminum alloy material, strong and lightweight.
- High elastic rubber wheels to achieve stable probe movement.
- Flexible structure, the truss can be setup without disassembling the chain.
- Easy buckle design for quick change links to adapt to different pipe diameters.

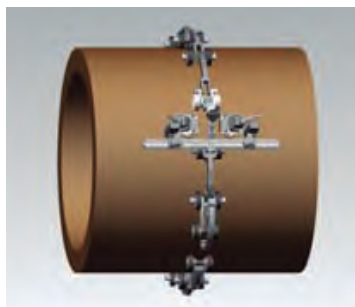
CPS-01 is suitable for circumferential weld inspection on long-distance pipeline with OD 1000-1300mm (39.38-51.18 inch), and CPS-02 series is suitable for medium & large pipe welds with OD 100-1000mm (3.94-39.37 inch) and higher wall thickness.



CPS-01 Up to 2PA+2TOFD probes



With motor AUS-01 for automatic scanning



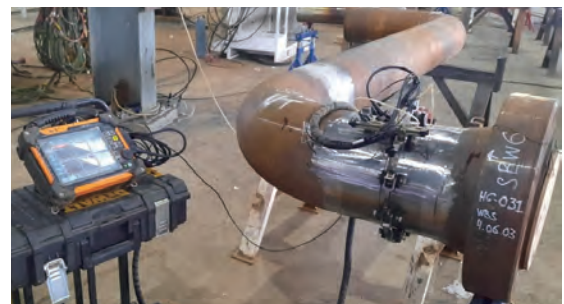
CPS-02  
2PA or 2TOFD probes



CPS-02A  
Up to 2PA+4TOFD probes



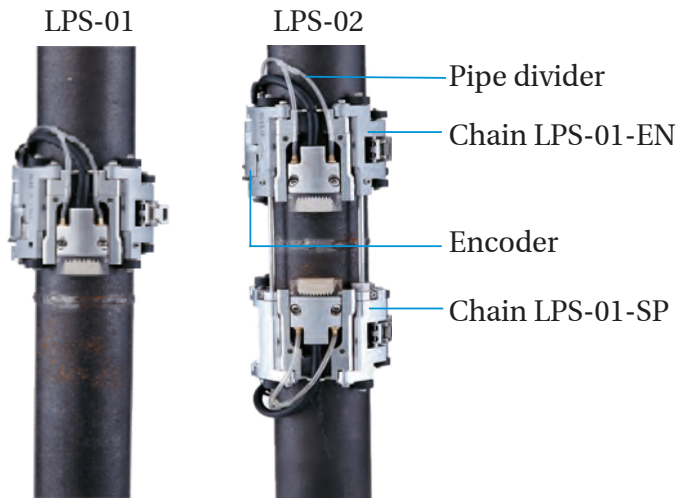
CPS-02B  
2PA+2TOFD probes



# Low Profile Crawler for Small & Medium Pipe Welds

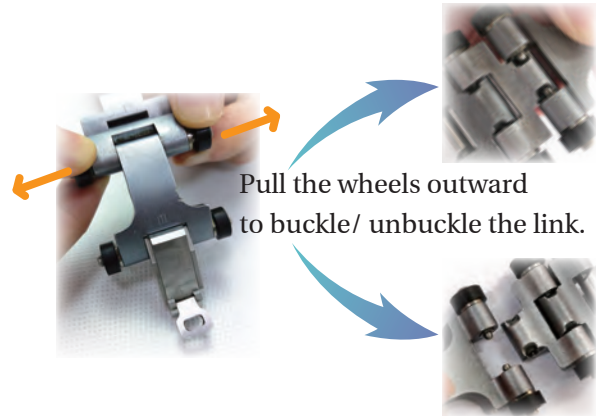
## LPS

Low profile crawlers LPS-01 and LPS-02 are used to perform circumferential weld inspection on tubes with OD ranging from 20.32-114.3mm (0.84-4.5 inch), and LPS-07 and LPS-08 are used on medium diameter pipes with OD ranging from 100-300mm (3.94-11.81 inch).



### Simple Buckle Design

Quick change links with no need to disassemble the whole crawler.



## Superior Features

- IP68.
- Probes and wedges can be quickly and easily changed.
- The probes spacing can be adjusted in the range of 0-55 mm.
- Provide stable and constant pressure around the pipe full circumference.
- Operates within 15mm clearance with 16 elements PA probe, 20mm clearance with 32 elements PA probe.

## Low-profile PA Probe

Probe Model	Frequency	Elements No.	Pitch	Elevation mm	Elevation Curvature Radius mm	Active Aperture mm	Corresponding Wedge
	MHz		mm				
3.5SL16-0.5-10-R35E	3.5	16	0.5	10	35	8	8R(35)60S4-I-AOD-XX
5.0SL16-0.5-10-R35E	5	16	0.5	10	35	8	
7.5SL16-0.5-10-R35E	7.5	16	0.5	10	35	8	
10SL16-0.5-10-R35E	10	16	0.5	10	35	8	
3.5SL32-0.5-10-R35E	3.5	32	0.5	10	35	16	16R(35)60S4-I-AOD-XX
5.0SL32-0.5-10-R35E	5	32	0.5	10	35	16	
7.5SL32-0.5-10-R35E	7.5	32	0.5	10	35	16	
10.0SL32-0.5-10-R35E	10	32	0.5	10	35	16	



LPS-01



LPS-07



LPS for elbow weld



LPS-02/08 are compatible with TOFD probes.

# Expandable PA & TOFD Crawler

## TSE

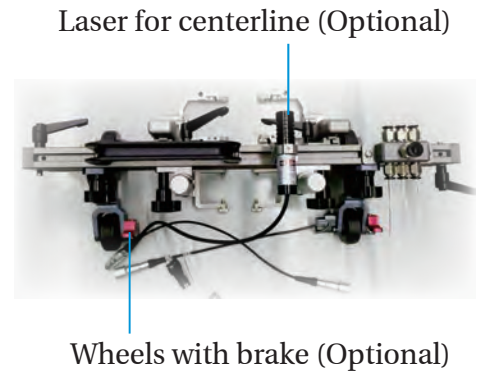
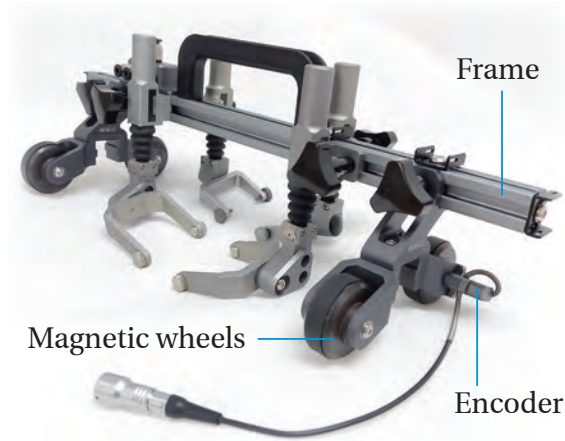
TSE series is suitable for PA and TOFD weld inspection on plate or pipe with OD  $\geq 168\text{mm}$  (6.62in). Specific range are subject to different combination.

### Probe Holder

Loose triangle knob to move probe holders.



Spring arm structure for good coupling.



### Superior Features

- IP68.
- Compact, lightweight, portable.
- Magnetic wheels for stable operation.
- Great expansibility, suitable for PA and TOFD inspection.
- Probe holders and wheels positions are easily adjustable.
- Probes and wedges can be quickly assembly without tools.

### Great Expansibility



1 PA probe



2 PA probes



2 TOFD probes



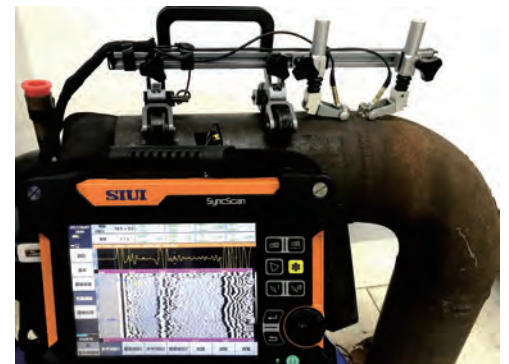
2 PA+2 TOFD probes



1 PA



2 PA

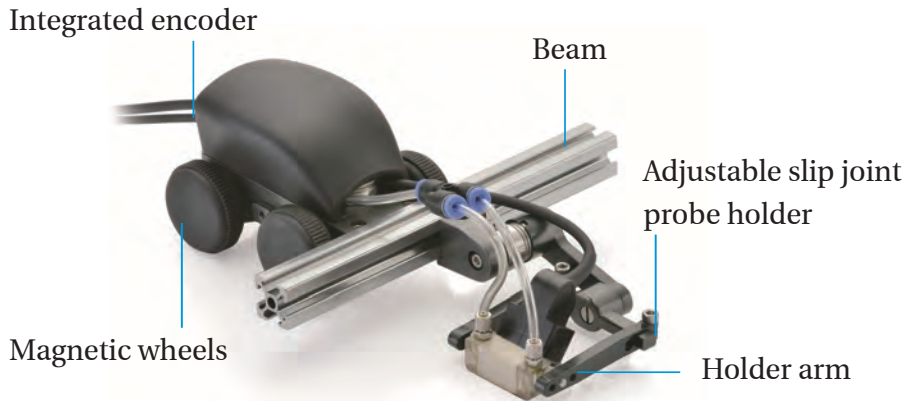


Elbow pipe weld

# Handheld PA & TOFD Crawler

## PTS-P05

The PTS-P05 is suitable for PA or TOFD testing on plate or pipe with  $OD \geq 250\text{mm}$ .



Turning arm adjustment

### Superior

- IP66.
- Mouse shape design for easy control.
- Magnetic wheels for stable operation.
- Spring arm structure for good coupling between the wedge and workpiece.
- Probe holder arm spacing can be adjusted to fix wedges of various specifications.
- Probe holder can be installed in both side of beam to achieve flexible scanning direction.

### Three Combinations



1 PA probe



2 PA probes



2 TOFD probes

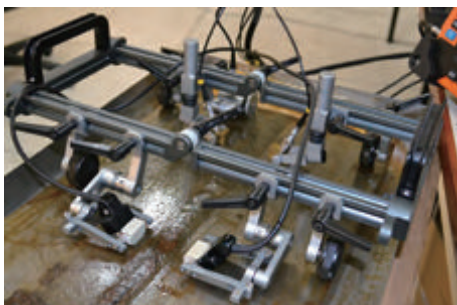


On-site

# Foldable PA & TOFD Crawler

## UHTS-X02

UHTS-X02 is suitable for PA and TOFD testing on plate and girth weld with pipe  $OD \geq 500\text{mm}$  (19.69in). It can also be folded for longitudinal weld with  $OD \geq 600\text{mm}$  (23.63in).



### Superior Features

- IP68.
- Magnetic wheels for stable operation.
- Support up to 3 pairs of probe holders (PA+TOFD) simultaneously.
- Spring arm structure for good coupling between the wedge and workpiece.



# Mini Crawler

## PES-02

PES-02 is suitable for PA single probe (with wedge) on plate or pipe with OD  $\geq 60$ mm.



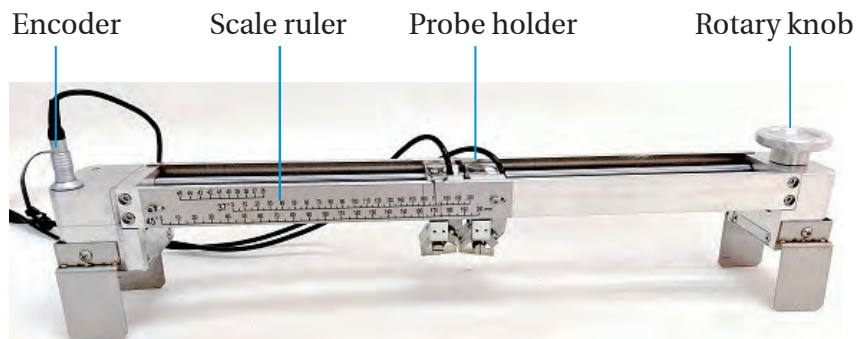
### Superior Features

- IP68.
- Small size, only 0.1kg.
- Aluminum alloy construction for harsh environment.
- Long and short pivot arms to fix various sizes of PA wedges.
- Customized for UT/TG/PA/TOFD probes on different application.

# Tandem Scanning Crawler for Rail Weld

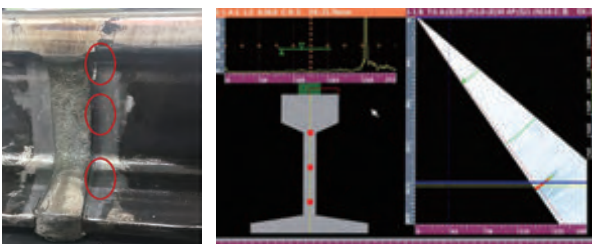
## RWS-P02

RWS-P02 is suitable for PA tandem scanning for rail welds, including thermite welding, pressure welding and flash welding.



### Superior Features

- IP68.
- Compact size, only 1.5 kg.
- Scale ruler help to locate the defect position more easily.
- Easy to operate, rotary knob to quick adjust probe positions.
- Compatible with 2 PA probes to achieve T/R tandem scanning.



Test result

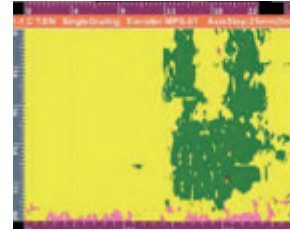


On-site

# PA Crawler for Corrosion Mapping

## MPS-01A

MPS-01A is suitable for PA immersion testing for corrosion on pipes with OD  $\geq$  100mm(3.94in) and plate.



C-scan for pipe scattered spot corrosion

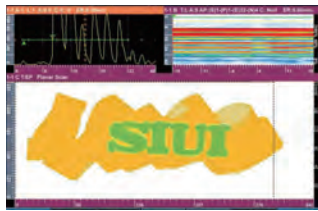
### Superior Features

- IP68.
- Magnetic wheels for stable operation.
- Mini water storage tank supports up to 15mm water layer.
- Consumable gasket fits tightly to the surface of the workpiece.
- Integrated PA immersion probe to provide wide coverage of sound beams.
- Bubbles discharge design ensure coupling not affected even by a few bubbles.

# Free 2D Crawler for PA Corrosion Mapping

## MPS-02

MPS-02 is suitable for PA inspection for corrosion on pipes with OD  $\geq$  100mm(3.94in) and plate, scanning in any direction in 2D space.



### Superior Features

- IP68.
- Mouse shape design for easy control.
- Magnetic or rubber wheels to adapt to different materials.
- Real-time display of probe position and statistical information.
- Compatible with dual linear array probe to improve testing efficiency.

# Crawler with PA Wheel Probe

## WPS-01

WPS-01 with PA wheel probe is especially good for testing corrosion on composite materials.

Suitable for circumferential scanning on pipe OD  $\geq$  200mm(7.88 inch), longitudinal scanning on pipe OD  $\geq$  100mm (3.94 inch) and flat plate.



### Superior Features

- Easy operation, C-Scan can be achieved easily with simple coupling.
- With different probes to achieve high resolution and strong penetration.
- Easy quantitative analysis of lamination and porosity for composite plates.
- 28 mm water delay line enables inspection of composites up to 56 mm thick.