

# SyncScan 3

## Phased Array Flaw Detector with TFM

### Bring More Possibilities for Your Inspection

SyncScan 3 is 64:128PR PAUT flaw detector with total focusing method (TFM) and 4-ch TOFD, which bring more possibilities for your inspection in oil & gas, transportation, aerospace, shipbuilding, manufacturing industries.

#### ● One-touch Smart Keys



NDT Ultracloud:  
Access to Ultracloud platform  
and use the cloud-based functions.



Measurement:  
Turn on the measurement function.



Scanning:  
Start or stop testing process.



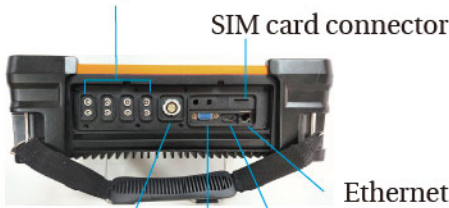
Save:  
Enter storage management and quickly save files.



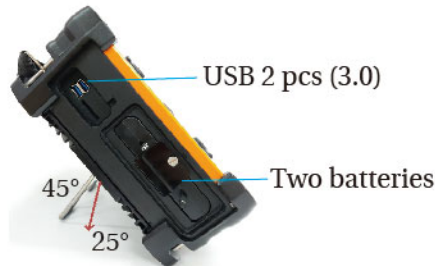
#### ● Overview

- IP65
- 6 kg with batteries
- 365×270×115 (mm)
- 12.1" touch screen, 1024×768 pixels

4 UT/ TOFD probes



Encoder in/out  
(support 3-axis coding)



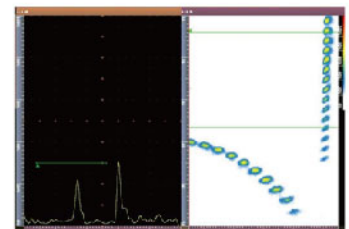
Two prop angles



Integrated fans 3 pcs

#### ● Special Algorithm – Faster Live TFM

- SyncScan 3 adopts special algorithm (patent pending) to achieve live TFM high-speed imaging, basing on reducing data transmission and computing resources.
- The envelope processing provides more stable amplitude and removes noises, which further improves TFM performance. The shape and size of defects are characterized clearly.



\* ISO 18563-1:2015, EN12668-1:2010 compliant.

\* Specific functions are subject to final order.

## ● 64 PA, 4-ch TOFD – Higher Configuration for Demanding Inspections

- 64 PA channels can provide better coverage and accuracy, suitable for inspecting complex composite materials, corrosion-resistant alloys and austenitic materials, etc.
- SyncScan 3 is equipped with 4 TOFD channels. With special PA to TOFD adapter, its PA channel can convert to TOFD channel to achieve 5-ch TOFD inspection, suitable for thick weld up to 400mm, with low carbon steel/ alloy steel materials.



## ● FMC – Supports Raw Data Analysis

Raw data can be recorded during full matrix capture (FMC) scanning, realizing data secondary development.

## ● 4 New Modules – Enhanced Wireless Transmission

- RF/ Bluetooth modules:

Automatic crawler can be real-time controlled by SyncScan 3 directly without remote control.

RF module supports transmission distance up to hundreds of meters.

- WIFI/ 4G modules:

WIFI assists data acquisition, ensuring real-time data transfer from equipment to PC, convenient and high efficiency.

New SIM card connector can be inserted into the SIM card to turn on the 4G network, enabling wireless connection anytime and anywhere. GPS is also available.



## ● Test Wizard – Retain Friendly and Upgraded

- SyncScan 3 continues to adopt step-by-step test wizard to guide users during the whole testing process, retains usual friendly experience.
- In TFM , the upgraded rectangle frame visualizes detection coverage, enables users to finish testing setup more quickly.



## Technical Specification

| TFM                      |   |
|--------------------------|---|
| Supported Modes          | LL, LLL, LLLL, TT, TTT, TTTT, TLT, TLL, LTT |
| Image Resolution         | 256×256, 128×128                            |
| Number of Focal Laws     | Up to 512                                   |
| Live TFM Envelope        | Yes   |
| No. of Channel           | 64  |
| Probe Connector          | Tyco, 1 pc                                  |
| Max. Supporting Elements | 128   |
| Focusing Mode            | Focusing in all points TFM                  |
| FMC Data Acquisition     | 4096pointst/channel, 16bit/point            |
| Pulse Voltage            | 10-100V, step 10V/20V                       |
| Pulse Width              | 50-1000ns, step: 10ns                       |
| Gain                     | 0-80dB, step:0.1/0.5/2/6/12dB               |
| Bandwidth                | 0.7-20MHz (-3dB)                            |
| A/D Sampling Rate        | 100MHz/12bit                                |
| Scan Type                | A/ B/ C                                     |
| Wizard                   | Scan wizard                                 |

## Technical Specification

|                             | Conventional UT  | Phased Array  | TOFD   |
|-----------------------------|--|---|--|
| <b>System</b>               |  |   |  |
| No. of Channel              | 4  | 64  | 4  |
| Probe Connector             | LEMO 00, 8 pcs   | Tyco, 1 pc  | LEMO 00, 8 pcs(same as UT)   |
| Max. Supporting Elements    | 8  | 128   | 8  |
| PR (Pitch & Catch) Function | —  | Available   | —  |
| Pulser                      | Negative square  | Bi-polar square   | Negative square  |
| PRF                         | Adjustable 10-2000Hz<br>Step: 20Hz   | 100Hz-10KHz<br>Step: 100/200/500/1000Hz   | Adjustable 10-2000Hz<br>Step: 20Hz   |
| Pulse Voltage               | 50V~400V, min. step 1V   | 10-100V, step 10V/20V   | 50V~400V, min. step 1V   |
| Pulse Energy                | —  | 4 levels  | —  |
| Pulse Width                 | 30-1000ns, step:10ns   | 50-1000ns, step: 10ns   | 30-1000ns, step: 10ns  |
| Damping                     | 25/75/200/1000Ω, 4 levels  | —   | 25/75/200/1000Ω, 4 levels  |
| Pulser Delay                | —  | 0-20μs, resolution 5ns  | —  |
| Pulser Focusing             | —  | Single point focusing   | —  |
| <b>Receiver</b>             |  |   |  |
| Gain                        | 0-110dB, step:0.5/2/6/12dB   | 0-80dB, step:0.1/0.5/2/6/12dB   | 0-110dB, step: 0.5/2/6/12dB  |
| Bandwidth                   | 0.5-20MHz (-3dB)   | 0.7-20MHz (-3dB)  | 0.5-20MHz (-3dB)   |
| A/D Sampling Rate           | 170MHz/12bit   | 100MHz/12bit  | 170MHz/12bit   |
| Sampling Point              | 1024, 16bit/ point   | Adjustable 256/512/1024, 16bit/point  | 1024, 16bit/point  |
| Rectification               | Positive/ Negative/ Full/ RF   | Positive/ Negative/ Full/ Filter/ RF  | RF   |
| Receiver Delay              | —  | 0-20μs, resolution 2.5ns  | —  |
| Receiver Focusing           | —  | Max. range: 1008 foci per scan line   | —  |
| Filter                      | 10 levels:<br>1-4/0.5-10/2-20/<br>1/2.5/4/5/10/13/15MHz  | 14 levels<br>Band-pass:<br>0.7-4/2.5-7/4-8.5/7-10/9-15/0.7-20MHz<br>High-pass:<br>HPF2.5/HPF4.0/HPF7.0/HPF9.0<br>Low-pass:<br>LPF7.0/LPF8.5/LPF10.0/LPF15.0 | 16 levels:<br>0.5-5/0.5-10/3.5-10/0.5-15/5-15/<br>0.5-20/1-4/0.5-10/2-20/1/2.5/4/5/10/<br>13/15MHz |
| Reject                      | 0-80%, step: 1%  | —   | —  |
| <b>Scan</b>                 |  |   |  |
| Scan Type                   | A  | A/S/L/C/D   | A/ TOFD  |
| Trigger Mode                | —  | Time-based/encoder  | Time-based/encoder   |
| Scan Length                 | —  | ≤4m/scan<br>(default parameter, step 0.5mm)   | ≤50m/scan, 0.5mm/step  |
| Focal Laws                  | —  | 512   | —  |
| Scan Angle Range            | —  | -89°~+89°, step 1°  | —  |
| Angle Spacing               | —  | 0.1°-5°, step 0.1°  | —  |
| Line Average                | —  | —   | 4 levels, 1/2/4/8  |
| Focus Position              | —  | 3-500mm, step: 1mm  | —  |
| Focal Mode                  | —  | Depth, Sound Path   | —  |
| <b>Basic</b>                |  |   |  |
| Range                       | 0-15000mm<br>Min. display range 5mm  | 0-1000mm, min. step 0.01mm,<br>Min. display range 3mm   | 0-15000mm, min. step 0.1mm,<br>Min. display range 5mm  |
| Material Velocity           | 500-15000m/s, min. step:1m/s   | 500-15000m/s, min. step:1m/s  | 500-15000m/s, min. step:1m/s   |
| Display Delay               | -10-1000mm, min. step: 0.01mm  | 0-1000mm, min. step: 0.01mm   | -10-1000mm, min. step 0.01mm   |
| Probe Zero                  | 0-200us, min. step: 0.01us   | —   | 0-200us, min. step 0.01us  |
| Probe Flank                 | 0-100mm, step: 0.01mm  | —   | 0-100mm, step 0.01mm   |
| Wizard                      | DAC, AVG/ DGS, Angle calibration,<br>Auto calibration (velocity, zero),<br>Plate, weld, forging scan   | Scan wizard,<br>velocity/delay/sensitivity/TCG<br>calibration wizard  | Scan wizard, PCS Calculation,<br>Probe Zero Calibration,<br>Ultrasound Parameter, Time Window      |
| Calibration                 | Zero, Velocity, Angle  | Zero, Velocity, Delay, Sensitivity, TCG   | PCS, Wedge Delay, PCS/Depth, Time Window, Probe Zero   |
| Test Point Selection        | Peak/ Flank/ J Flank/G Flank, G Peak   | Peak/ Flank/ J Flank/ G Flank, G Peak   | —  |
| Measurement                 | Three gates: to measure echo amplitude, amplitude dB difference, sound path, Ra/Da   | Three gates for each A scan, max. 18 gates: to measure echo amplitude, sound path, Ra/Da  | Flaw height and length measurement.  |
|                             | Cursor: two cursors to measure horizontal and vertical position of B scan and distance between cursors (active when optional B scan function is available.). | Cursor: two cursors to measure horizontal and vertical position of B/C/D scan and distance between cursors on B/C/D scan.                                   |  |
| Gate Mode                   | Normal, Tracing  | Sound Path, Depth   | —  |
| Gate Start                  | Full range   | Full range  | —  |
| Gate Width                  | Full range   | Full range  | —  |
| Gate Thresh                 | 10-90%, step: 1%   | 10-90%, step: 1%  | —  |
| Display Mode                | —  | A, B, C, D, A+B, B+C, B+D, A+B+C, A+B+D, 3A+B, A+B+C+D, A+B+R, A+B+C+R, A+[B], A+C, full screen.  | —  |

## Technical Specification

|                                 | Conventional UT   | Phased Array  | TOFD   |
|---------------------------------|---|---|--|
| <b>Measurement</b>              |   |   |  |
| Curve Function                  | AVG/DGS<br>DAC: Max. 6 lines & 16 points for each line  | TCG & DAC: Max. 6 lines & 16 points for each line   | —  |
| Auxiliary Function              | Full screen, coordinates switch (sound path/ depth/ horizontal), auto gain (single/ continuous), second leg color, wave compare, gate expansion, wave filling, peak envelope, auto freeze, Cineloop, screenshot, CrackMeas, API 5UE, AWS, FFT, CSC, TCG, B-Scan, FlatWeldSim, BEA | Auto gain: Single/ Continuous<br>Auto Search: Search the highest echo amplitude scan line within gate range in B scan. (available when in R view)<br>Group function: max. 6 groups<br>FlatWeldSim, C Scan In-Depth<br>Probe Element Testing | —  |
| Alarm Signal                    | Signal&sound alarm: positive/ negative  | Signal&sound alarm: positive/ negative  | —  |
| Display Measure Value           | —   | 8 positions can be user-defined.  | —  |
| Data Analysis                   | —   | Image mode switch, image gate dynamic reconstruction and report generation  | LW/BW straightening/ removal, contrast adjust, gain adjust, zoom |
| <b>Testing Index</b>            |   |   |  |
| Time Base Linearity             | ≤0.5%   | —   | —  |
| Vertical Linearity              | ≤3%   | —   | —  |
| Amplitude Linearity             | ≤±2%  | —   | —  |
| Attenuator Precision            | 20dB±1dB  | —   | —  |
| Dynamic Range                   | ≥32dB   | —   | —  |
| <b>Software</b>                 |   |   |  |
| SyncScan 2<br>Optional Software | —   | PA Flat Weld Solution<br>PA Angle Weld Solution<br>PA Corrosion Solution<br>PA Pipe Girth Weld Solution<br>Simultaneous Display of PAUT and TOFD Software<br>PA Long Pipe Solution<br>PA Corner Joint Solution                              | SAFT<br>1-ch TOFD<br>2-ch TOFD<br>3-ch TOFD<br>4-ch TOFD         |
| SuporUp<br>PC Analysis Software | Analysis Software (Standard)<br>PA Corrosion Software (Optional)<br>PA Emulator Software (Optional)<br>Acquisition Software (Optional)  |   | Two-ways Activation:<br>•License<br>•Dongle                      |

| <b>General Technical Specification</b> |   |
|--|---|
| Display Screen                         | 12.1" high brightness TFT LCD, 1024×768 pixels    |
| Dimension (W×H×D)                      | 365×270×115 (mm)                                  |
| Weight                                 | 6 kg with 2 batteries                             |
| Battery                                | Lithium batteries, 2 pcs                          |
| Battery Capacity                       | 7.5 Ah/pc, operation time around 3.5 hours        |
| External Power Supply for Adaptor      | AC 100-240V 50Hz/60Hz                             |
| Adaptor Output                         | 15V DC  |
| Power                                  | 52W   |
| Data Storage                           | Standard SD card (16G)                            |
| Language                               | English/ German/ French/ Polish/ Czech/ Hungarian |
| <b>Input/Output</b>                    |   |
| USB Connector                          | 2 pcs (3.0)                                       |
| Ethernet Connector                     | 1 pc  |
| Video Output                           | VGA/ HDMI ports                                   |
| Encoder Connector                      | 1 pc (14-core)                                    |
| <b>Environment Tests</b>               |   |
| Operation Temperature                  | -10°C -45°C                                       |
| Storage Temperature                    | -20°C -60°C                                       |
| IP Code                                | IP65  |
| Certifications                         | ISO 18563-1:2015 & EN12668-1:2010                 |

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