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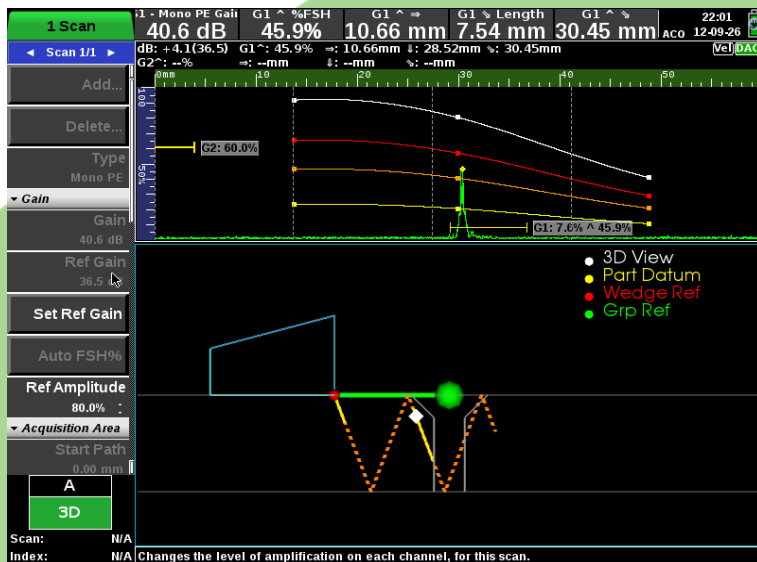
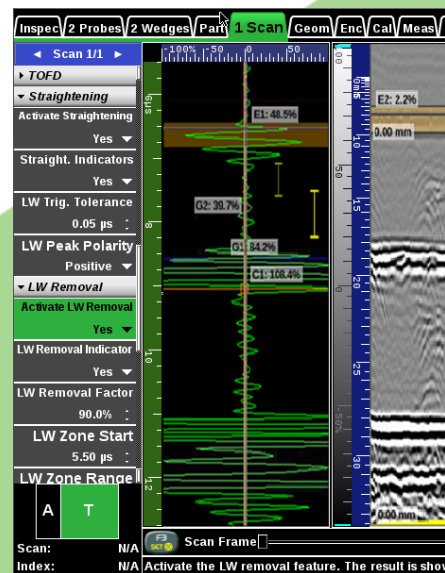


Simplicity | Capability | Reliability



## As Simple as you want

- 30 Second Configuration
- Single Hand Operation
- Interactive Help & 3D views
- Configuration & Calibration Wizards
- "Parameter Genius" for additional guidance
- Minimize training: Common User Interface

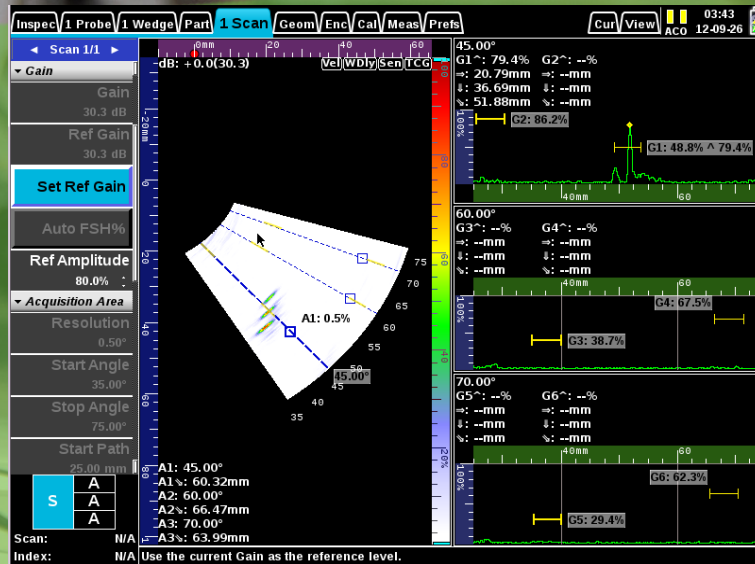


**TOFD**

**UT**

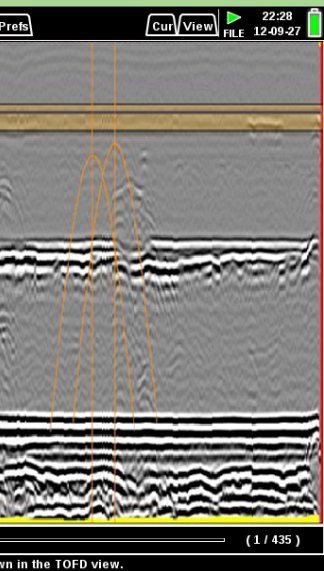
**ST**

PA



## As Capable as you need

- UT, TOFD & PA Inspection Modes
- Unique cursors for precision measurement
- Recordability: screen shots, full data recording, fully traceable.
- UT Studio – Fast and dynamic reporting
- Customized imaging layout.... over 25 to choose from.



## STEP UP from conventional UT to phased array.

Formats available are:

Prisma UT

Prisma UT + TOFD

Prisma UT + PA

Prisma UT + PA + TOFD

**Upgradeable anytime, anywhere!**



# prisma series

....true performance to meet all your inspection requirements.



The **prisma** is the latest product from Sonatest's technician focussed product development and research. An advanced ultrasonic flaw detector offering the technician an extremely comprehensive tool for test and measurement, which can be upgraded to include TOFD and Phased Array capability. An upgrade can be carried out wherever you are, there is no need to return the instrument, eliminating any downtime.

Simple controls, superior performance, advanced features and a rugged enclosure deliver simplicity, capability and reliability to the technician's finger tips.



With the best display size and resolution in it's category, the **prisma** provides the end user with an intuitive and workflow driven interface, excellent imaging capability uses the Full screen mode allowing 100% of the display to be used for Scan Imaging. Numerous palettes are accessible for all scan types "see things how you want to", in amplitude or depth C-Scans, customise your palettes. Take full advantage of the advanced display modes which include smoothing, contouring and averaging all available to enhance your signal quality.



The **prisma** is constructed to exacting standards using a rigid, shock mounted, internal chassis surrounded by an impact absorbing enclosure and designed to meet IP66; which ensures the unit is fully sealed against fine dust and jets of water.

Typical applications are broad but include Weld Inspection, Corrosion Mapping, Aerospace and Composite Testing.



## Prisma UT

The Prisma UT model is fully loaded, carrying all the basic and advanced features of the Sonatest flaw detector range. Prisma UT offers damping control to either optimize near surface resolution or energy transmission. The ability to capture screens is standard combined with automatic reporting capability which enables reports to be formatted with relative bespoke customer information such as logos etc. The most popular flaw sizing techniques such as DAC, AVG/DGS, TGC and AWS are all on-board.

Thanks to the on-board software enhancing the B and C-Scan imaging capabilities, the Prisma UT enables field technicians to conduct dedicated corrosion and composite inspections, together with comprehensive on-site thickness profiling.

## Prisma TOFD

Ultrasonic Time of Flight Diffraction (TOFD) has gained in popularity over the last decade and via the Prisma TOFD, Sonatest brings to the market a truly portable and powerful TOFD unit. Knowing that TOFD inspection can be carried out on wall thickness as thin as 6mm (1/4"), the Prisma offers the best digitizing frequency of its category going up to 200MHz. Simply put this means that high frequency transducers can be used, ensuring the most accurate flaw height sizing possible.

TOFD is a versatile technique; with two UT channels the Prisma permits the inspection of thick component in a single pass. This is enhanced by the high voltage square wave pulsers delivering up to 450V.

Prisma TOFD offers the complete hardware configuration to deliver the best performance, but it would be incomplete without the on-board software features such as hyperbolic cursors, lateral wave straightening and lateral wave removal.

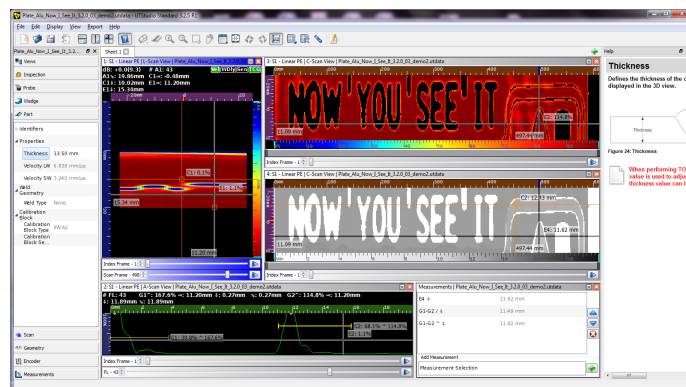
## Prisma PA

Ultrasonic Phased Array technology has become the established method for advanced NDT testing applications. Phased Array Techniques allow the user to cover a wider volume of inspection; such as being able to cover the complete span of a weld without the need to move or reposition the transducer. This is possible due to phased array enabling beams to be electronically steered. This technique results in comprehensive imaging of the results showing a quasi cross section of the inspected part.

With the Prisma PA you can switch easily and quickly between the UT and PA operating modes with a simple press of a button, no data or time is lost. The Inspection Plan shows the operator in 2D and 3D where probes are positioned on the test part, simplifying the inspection set up and providing an inspection reference for reporting. All adjustments to focal laws are instantaneous. Multiple sectorial scans, true top, side and end view extractions, together with C-Scans, are all supported.

## UT Studio

UT Studio is a PC based software, which accompanies the Prisma and enables powerful post analysis capability. Not only does it offer excellent report generation features but new views can be generated and comparative analysis can be conducted by opening multiple inspection data files, re-gating and producing fully illustrated reports. Working in a familiar



“drag and drop” environment the end user can create multiple views such a Top, End and B-Scan visual files by simply dragging Prisma data files onto templates for presentations. Full recordability of data when using the Prisma is standard, which means that screenshots and all data can be retained and analyzed at a later date using UT Studio. In using the full data gathering capability traceability can be achieved; hence repeatability of the inspection and results can be confirmed.

Powerful measurement cursors and extractors can be added to identify indications, size and annotate defects. Reports are easily generated and can be exported into PDF format for review and circulation.

|                         | Conventional UT  | Phased Array  |
|-------------------------|--|---|
| <b>Pulsers</b>          |  |   |
| Configuration           | 2 UT Channels  | 16:16 or 16:64  |
| Test Mode               | Pulse-Echo, Transmit/Receive and TOFD                        | Pulse-Echo, Transmit/Receive                            |
| Transducer Socket       | LEMO 1 or BNC  | I-PEX   |
| Pulse Voltage           | -100 V to -450 V (in steps of 10 V)                          | -25 V to - 75 V (in steps of 5 V)                       |
| PRF                     | 1 Hz to 1500 Hz  | 1 Hz to 5000 Hz   |
| Pulse Shape             | Negative Square Wave (with ActiveEdge)                       | Negative Square Wave (with ActiveEdge)                  |
| Pulse Width             | Adjustable: Spike to 2000ns (2.5 ns resolution)              | Adjustable: Spike to 1000ns (2.5 ns resolution)         |
| Edge Time               | 15 ns in 50 $\Omega$ load @200 V                             | 12 ns in 50 $\Omega$ load @50 V                         |
| Output Impedance        | 5 $\Omega$   | <10 $\Omega$  |
| Trigger Synchronisation | On encoder resolution or internal PRF (both encoded or not)  | On encoder resolution or internal PRF (not encoded)     |
| Focus Delay Range       | n/a  | 0 to 10 $\mu$ s (2.5 ns resolution)                     |
| Damping Resistor        | Selectable: 50 $\Omega$ or 400 $\Omega$                      | n/a   |
| <b>Receivers</b>        |  |   |
| Gain Range              | 100 dB (0.1 dB steps) Analogue Gain                          | 0 to 76 dB (0.1 dB steps), Analogue Gain                |
| Max Input Voltage       | 25 Vp-p  | 200 mVp-p   |
| Input Impedance         | 1 k $\Omega$ (pitch and catch)                               | 200 $\Omega$  |
| Bandwidth               | 200 kHz to 22 MHz (-3 dB)                                    | 200 kHz to 14 MHz                                       |
| Analog Filters          | 4 (automatic or manual)                                      | 3 (automatic)   |
| Digital Filters         | 10 (automatic or manual)                                     | 10 (automatic or manual)                                |
| Rectification           | Full wave, positive, negative, none (RF)                     | Full wave, positive, negative, none (RF)                |
| Single Enhancement      | Digital filters, Smoothing, Contouring, Rejection, Averaging | Digital filters, Smoothing, Contouring, Rejection       |
| Focus Delay Range       | n/a  | 0 to 10 $\mu$ s (16ns resolution interpolated to 3.8ns) |
| <b>Data Acquisition</b> |  |   |
| Architecture            | 2 channels, true 200 MHz sampling rate                       | 16 Channels, Full digital Delay & Sum                   |
| Digitizer Resolution    | 12 bit ADC   | 12 bit ADC  |
| Amplitude Measurement   | [0% to 100%] or [0% to 150%] FSH                             | [0% to 100%] or [0% to 150%] FSH                        |
| Data Processing         | 16 bits/sample   | 16 bits/sample  |
| Data Recording          | Full raw data recording (plus sub-sampling options)          | Full raw data recording (plus sub-sampling options)     |
| File Size               | up to 3 GB   | up to 3 GB  |
| Digitizing Frequency    | 50 MHz, 100 MHz, 200 MHz                                     | 65 MHz  |
| Focal Laws              | n/a  | 128   |
| Focussing Type          | n/a  | Constant Depth, Constant Path, Constant Offset          |
| Max A-Scan Length       | 8192 samples   | 4096 samples  |
| Sub-Sampling            | 1:1 to 1:128   | 1:1 to 1:128  |
| Reference               | Initial Pulse or Gate/IFT supported                          | Initial Pulse or Gate/IFT supported                     |
| Trigger Sync.           | Encoder or Internal  | Encoder or Internal                                     |
| <b>Scan &amp; Views</b> |  |   |
| Supported Scans         | A-Scan & TOFD  | S-Scan or L-Scan  |
| Number of Scans         | up to 2  | 1 (with up to 3 extracted A-Scans)                      |
| Views                   | A, B, C-Scan, Merged & TOFD                                  | A, B, C, L, S-Scan, Merged plus true TOP & END          |
| Colour Maps             | up to 10   | up to 10  |
| Number of Layouts       | 18   | 35  |
| <b>Cursors</b>          |  |   |
| Cursor Types            | Cartesian, Hyperbolic (TOFD)                                 | Cartesian, Extraction Box, Angular                      |
| Measurements            | Path Length, Depth, Surface Distance, DAC, AWS, DGS          | Path Length, Depth, Surface Distance, DAC, AWS          |

# Specification



| Conventional UT        |  | Phased Array   |
|------------------------|--|--|
| DAC & TCG              |  |  |
| DAC points             | 16   | 16   |
| DAC                    | 1 with 3 “sub DACs”  | 1 with 3 “sub DACs” per focal Law  |
| TCG points             | 16   | 16   |
| Gain Range             | 60 dB  | 40 dB  |
| Max Gain Slope         | 60 dB/μs   | 50 dB/μs   |
| Gates                  |  |  |
| A-Scan Gates           | 4 gates per A-Scan   | 4 gates per A-Scan<br>(3 extracted A-Scans per S/L-Scan)   |
| Gate Trigger           | Flank/Peak   | Flank/Peak   |
| S/L-Scan               | n/a  | 1 Extraction Box   |
| Alarm LED              | 2 (sync on all gates & DACs)   | 2 (sync on all gates & DACs)   |
| Measurements (A-Scan)  | Peak & Flank (FSH, dB, Depth, Beam Path Length, Surface Distance), Echo-to-Echo, Floating Gates (reference from IFT) | Peak & Flank (FSH, dB, Depth, Beam Path Length, Surface Distance), Echo-to-Echo, Floating Gates (reference from IFT) |
| Interface & Reporting  |  |  |
| Integrated Help        | Active help & parameter description / Optimization   |  |
| Remote Connection      | Onboard VNC Server and FTP Server (connection through Ethernet protocol)   |  |
| Wizards                | Configuration, Velocity and Zero, Wedge Delay, Sensitivity, TCG, DAC, DGS, Element Activation, Encoder               |  |
| Languages (dynamic)    | Selectable: English, German, French, Spanish, Russian, Chinese, Hungarian, Italian, Portuguese                       |  |
| Report Generation      | PDF Report (includes customer logo, scan acoustic parameters, measurements, etc.), PNG screen capture.               |  |
| PDF Reader             | Allows viewing any uploaded PDF file, scan plan, procedures, old reports etc.  |  |
| Inputs & Outputs       |  |  |
| Encoder                | 1 or 2 axis encoding (quadrature input)  |  |
| Digital Inputs         | 2 input lines (5V TTL)   |  |
| Digital Outputs        | 4 Output lines (5V TTL, 20 mA) for alarm or other external control   |  |
| Power Output           | 5V, 350 mA, current limited  |  |
| Enclosure              |  |  |
| Dimensions (HxWxD)     | 205mm x 300mm x 90 mm  |  |
| Weight                 | 3.5 kg (with battery)  |  |
| Display Size           | 8.4 inch (diagonal)  |  |
| Display Resolution     | 800 x 600  |  |
| Display Colours        | 260k (65535 colours for scan palettes)   |  |
| Display Type           | TFT LCD, 450 Cd/m2, with 2% reflectivity   |  |
| USB ports              | 3 USB Master ports   |  |
| Ethernet               | 100 Mbps   |  |
| Battery & Power Supply |  |  |
| Battery Type           | Intelligent Li-ion   |  |
| Number of batteries    | 1  |  |
| Operation              | On battery or on External power (DC Power Pack)  |  |
| Battery Replacement    | Yes, no tools required   |  |
| Battery Recharge       | Recharge in unit (with unit On or OFF) - External Battery Charger (std) (as per EN16392)                             |  |
| Battery Life           | Typical: 7 hours in UT mode, 6 hours in PA mode  |  |
| Environmental          |  |  |
| IP Rating              | Designed to meet IP66  |  |
| Operating Temperature  | -10 °C to 45 °C (14 °F to 113 °F)  |  |
| Storage Temperature    | -25°C to 60°C (-13°F to 140°F)   |  |
|                        |  |  |



**Onsite Practicality**



**Ergonomic Design**



**Technology Integration**

## **prisma** UT Standard Kit

Dual UT Channels with:

- A-Scan Recording
- 2 Axis Encoding
- Interface Triggering (IFT)

A,B and C Scan Displays

USB Stick (8GB)

Couplant

User Manual/ Quick User Guide

2 Point Neck Harness

Lithium-Ion Battery Pack

Power Cord & Power Supply adaptor

Screen Protector (Anti-Glare)

Transport Case (Airplane Carry on Size)

## **prisma** UT/PA 16/16 Standard Kit

Dual UT channel kit above plus  
16:16, manual PA

### **Options**

#### **UT option**

TOFD

**\*encoding for UT is standard**

\*IFT for UT is standard

#### **PA option**

16:64

2 axis encoding & recording for PA

IFT for PA

Encoder Y-Splitter

### **Software Options**

CSV Export Software function to export  
view data into a CSV format.



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