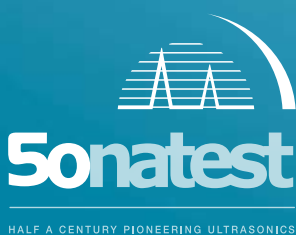




# POWERSCAN 450P

HIGH POWER ULTRASONIC FLAW DETECTOR



High power 450 volts square wave pulser

Advanced DAC/AVG sizing

Low frequency narrow band amplifier (0.25MHz to 5MHz)

Exceptional Signal-to-Noise ratio

Large full screen mode for clear viewing at distance

Transflective colour TFT display for sunlight readability

# THE POWERSCAN 450<sup>P</sup>

## Setting standards of performance and reliability

For over 20 years the Powerscan name has meant exceptional performance with class leading design. The latest developments in amplifier and pulser technology deliver higher levels of near surface resolution, penetrating power and excellent signal to noise ratio.

### High Performance with Total Control

The Powerscan delivers high performance and advanced features, yet our engineer's experience in user interface design has ensured it is easy and quick to use. The acknowledged ease of use of the previous Powerscan generation has been enhanced with the menu navigation key, providing easy access to functions. The menu structure has been designed to guide the user through their task with operation quickly becoming second nature.

### Robust and Reliable

Sonatest's reputation for robust design and proven reliability is an important aspect of flaw detector ownership. Down time is expensive and should be minimised to ensure maximum productivity. The Powerscan is constructed to high standards using Xenoy plastics and sealed to IP67, giving excellent water resistance so it can withstand the tough environments in which operators work.

The Powerscan comes with 2 years warranty, extendable to 5 years with Sonacover, and a worldwide service network.

### High Visibility Display

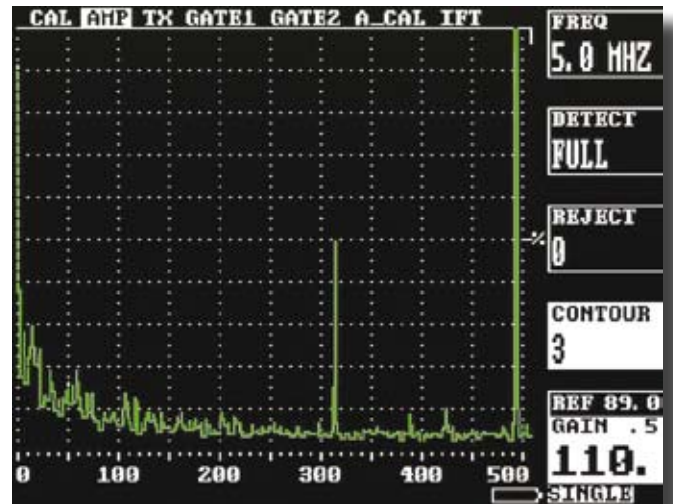
For any flaw detector the display is a crucial element. The Powerscan has a colour transfective TFT display as standard, providing high visibility at any light level. The choice of colours for menus and waveform display enhance clarity, with the LCD simulation mode giving direct sunlight readability. The TFT does not suffer the typical black out problems or temperature limitations of LCD giving full weather capability. The new Full Screen mode maximises the A-scan area to improve readability further whilst testing and its fast response and peak capture functionality ensure any indication is clearly displayed, even if it only appears for one cycle of the 500Hz PRF.



## High Power - Low Noise

When testing large forgings and castings high power and low noise are essential. The Powerscan's high power 450 Volt square wave pulser and ultra low noise amplifier achieve an excellent signal to noise ratio. This class leading performance enables testing of very attenuative or large components.

The 20 metre range and calibrated delay makes the testing of long shafts simple and extremely accurate, while the ability to recall 100 previous waveforms allows quick evaluation of defect growth.

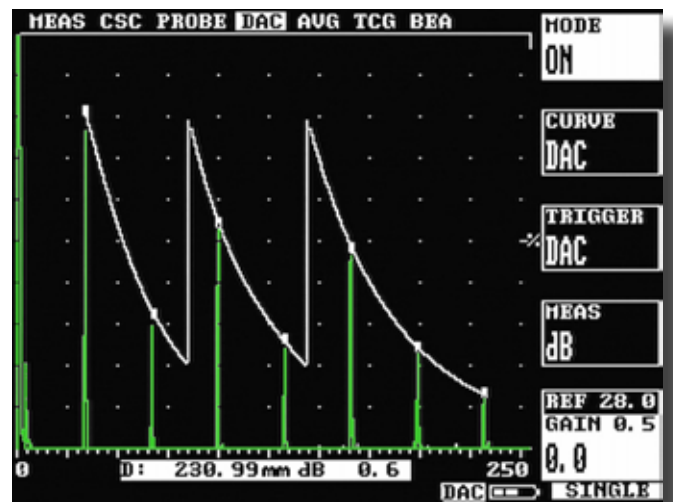


## Split DAC & AVG

Split DAC and AVG (DGS) are advanced amplitude defect sizing tools necessary for testing thick welds and large castings and forgings. Due to the decay of the curves it is not possible to evaluate a defect signal on long ranges, where the amplitude is too low.

Split DAC/AVG splits the timebase into 3 regions, where the height of the curve and amplifier gain is automatically increased by reference +12dB and reference +24dB when the curve drops to 20% height to re-position at 80% height.

By using this feature it is then possible to inspect the whole region at once without the need to manually increase the curve height or reference gain, in accordance with EN583-2 Sensitivity and Range Settings.



## Application Areas

- Railway Axle Testing
- Long Shafts
- Large Castings & Forgings
- Thick Attenuative Materials e.g. composites
- Rolling Mill Rolls
- Turbines



## SDMS (Optional Sonatest Data Management Software)

This Windows based data management tool allows the user to interface a Sonatest digital flaw detector with a PC. The software uploads and downloads panel settings and A-scans, which can also be copied and pasted into Word for customised reporting. Thickness readings can be transferred directly into Excel with the ability to produce charts for B & C-Scans, colour 3D mapping etc.





# POWERSCAN 450<sup>P</sup> Specifications

<b>Test Range</b>	0 - 1mm (0.05in) up to 0 - 20000mm (800in.) at steel velocity. Variable in 1,2,5 sequence or continuously in 1mm (0.05in) increments. Also from 1 to 5000(µs).	<b>AGC</b>	Automatic Gain Control automatically sets the signal to a level between 10-90% FSH with tolerance between 5-20% accuracy.
<b>Velocity</b>	256 to 16000m/s continuously variable.	<b>DAC</b>	DAC defined by up to 10 points and digitally drawn on screen. DAC curves meet requirements of EN 1714, JIS and ASME standards, selectable between -2, -6, -10, -12 and -14dB. Amplitude read out selectable between % DAC, % FSH or relative dB.
<b>Probe Zero</b>	0 to 999.999µs, continuously variable.	<b>TCG</b>	Time Corrected Gain, also known as Swept Gain. 40dB dynamic range greater than 30dB per microsecond and up to 10 points may be used, setting all signals initially to 80% FSH.
<b>Delay</b>	Calibrated delay from 0 -20000mm in 0.05mm steps at steel velocity (0-400in. in 0.002in. steps).	<b>Backwall Echo Attenuation</b>	0- 40dB attenuation.
<b>Gain</b>	0 to 110dB. Adjustable in 0.5, 1, 2, 6, 10, 14 and 20dB steps. Direct access to gain control at all times.	<b>AWS</b>	Built in software for evaluation of defect indications in accordance with AWS D1.1 structural weld code.
<b>Test Modes</b>	Pulse echo and transmit/receive.	<b>AVG/DGS</b>	Automatic calculation from transducer data.
<b>Pulser</b>	100V - 450V square wave pulser. Pulse width from Spike to 2000ns duration - rise/fall times <10ns into 50 ohms at 200V. Width adjustable in 2% of nominal width, minimum 1ns maximum 40ns.	<b>Auto-Cal</b>	Provides automatic calibration from two echoes.
<b>ActiveEdge™</b>	Unique active pulse control for enhanced near surface resolution and signal response. Replaces traditional damping control.	<b>Clock</b>	Sets time and date.
<b>P.R.F</b>	Selectable 5 to 100Hz in 5Hz steps then 100 to 500Hz in 50Hz steps.	<b>Reference Waveform</b>	This menu displays a waveform from one of the A-log stores as a reference or fingerprint display in a colour different from the active display highlighting differences from the reference.
<b>Update Rate</b>	60Hz (NTSC Mode); 50Hz (PAL Mode).	<b>Notes</b>	Alphanumeric labelling for panel and A-log allows the user to enter Notes for storage with panel settings and A-scans.
<b>Rectification</b>	Full wave, positive or negative halfwave and unrectified rf.	<b>Display Freeze</b>	For capturing the current A-scan image.
<b>Frequency Range</b>	5 narrow bands centred at 0.25MHz, 0.5MHz, 1MHz, 2 to 2.25MHz, 4 to 5MHz. Broad band at 2MHz to 22MHz (-6dB) and 1MHz to 35MHz (-20dB).	<b>Active Peak Memory</b>	Envelope waveform for echodynamic pattern determination, with simultaneous live A-scan display.
<b>System Linearity</b>	Vertical = 1% Full Screen Height (FSH). Amplifier Accuracy ± 0.1dB. Horizontal ±0.4% Full Screen Width (FSW).	<b>Keylock</b>	Prevents accidental alteration of parameters.
<b>Reject</b>	80% linear reject. LED warning light when selected.	<b>Help Key</b>	For instant operator guidance on using the Powerscan 450P.
<b>Units</b>	Metric (mm), inch (in) or time (µs).	<b>Language Support</b>	Supports multiple languages. User selectable between English, German, Spanish, French, Dutch, Italian, Russian, Polish, Czech, Finnish & Hungarian. Others available on request.
<b>Display</b>	Colour Transflective TFT: Display area 111.4 x 83.5mm (4.39 x 3.29in) 320 x 240 pixels. A-Scan Area 255 x 200 pixels (315 x 200 expanded), 8 colour options and variable brightness.	<b>Waveform Smoothing</b>	Gives a smooth signal envelope, simulating analogue equipment.
<b>Gate Monitor</b>	Two fully independent gates for echo monitoring and thickness measurement. Start and width adjustable over full range of unit, amplitude variable from 0 to 100% FSH. Bar presentation. Positive or negative triggering for each gate with audible and visual alarms.	<b>Outputs</b>	Full bi-directional serial interface to transfer parameters, thickness readings and waveform memories. Composite video, PAL or NTSC compatibility. Analogue proportional outputs programmable to distance or amplitude of signal in the gate. Transmitter sync output
<b>Gate Expansion</b>	Expands range to width of Gate 1.	<b>Front USB</b>	For connection to printers, keyboards and PC.
<b>Measurement Modes</b>		<b>Printers</b>	Supports any printer with PCL support including Hp Deskjet, Epson.
<b>Mode 1</b>	Signal Monitor	<b>Power</b>	Lithium Ion battery pack 14.4V, 5.0 ampere hours, gives up to 16 hours duration from a fully charged pack. Indication of low battery status. Recharge time 3-4 hrs. Mains pack option.
<b>Mode 2</b>	Depth and amplitude of first signal in gate.	<b>Charger</b>	100 - 240VAC, 50-60Hz.
<b>Mode 3</b>	Echo-to-Echo distance measurement. (single gate)	<b>Transducer Sockets</b>	BNC or LEMO (factory option)
<b>Mode 4</b>	Trigonometric display of beam path, surface distance and depth of indication, curve surface correction and X-OFFSET for probe index. Half skip indication on screen.	<b>Environmental</b>	Case sealed to IP67
<b>Mode 5</b>	Gate to Gate distance measurement. (independent gates).	<b>Temperature</b>	Operating -10°C to +55°C (14 to 131°F). -20°C to +70°C. (-4 to 158°F) survivable. Storage: -40°C to +75°C. (-40 to = 167°F)
<b>Mode 6</b>	T-Min mode for holding minimum thickness reading. Resolution to 0.01mm (0.001in) for distance measurement or 1% FSH for amplitude measurement. Large display of measurement at top of A-Scan display. Measurement mode selectable between peak and flank.	<b>Size</b>	255 x 145 x 145mm (10.0 x 5.7 x 5.7in)
<b>A-Scan Memory</b>	Maximum of 800 waveforms can be printed or transferred to a PC using optional SDMS software.	<b>Weight</b>	2.5kg (5.5lbs) with Li-Ion cells.
<b>Panel Memory</b>	100 stores for retaining calibrations.	<b>Standard Kit Includes</b>	Powerscan 450P Li-ion Battery & Battery Charger Fabric Carry Bag Calibration Certificate Instruction Manual (EN12668)
<b>Thickness Logging</b>	Storage for 8000 thickness readings configured either by Block/Location/Number mode or pre-programmable work sheets in sequential mode. Readings can be exported to MS Excel using optional SDMS software.		



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