SONATEST Masterscan 335

HIGH PERFORMANCE ULTRASONIC FLAW DETECTOR

- Variable width square wave pulser -
  - 400v from 100 to 500 ns
  - 200v from 20 to 500 ns
- Modified broadband amplifier for high frequency, high damped probes
- Narrowband amplifier filters at 1MHz; 2MHz; 5MHz; 10MHz and 15MHz.
- Reference waveform with colour display for defect identification
- Auto-calibration plus memory recall for simpler use.
- For high frequency and aerospace applications
- A-scan memory for 100 stores with alphanumeric notes
- Time corrected gain for improved inspection methods
- X-offset for angle beam probes when testing weldments

The MASTERSCAN 335 digital ultrasonic flaw detector been designed to provide superior performance in every application whether requiring high penetration and low noise for testing attenuative materials, or very high resolution for intricate aerospace work. The latest digital technology has been used to provide innovative features that offer real advantages to the user, such as NOTES for memory labelling, Time Corrected Gain, On screen DAC curves and AUTO_CAL, the easiest and most accurate way to calibrate any flaw detector. A number of optional modifications are available to suit individual application needs.

High Performance Pulser

The MASTERSCAN 335 has a variable square wave pulser to allow the operator to optimise the performnace of transducers. By varying the probe width a significant increase in probe sensitivity or signal resolution can be obtained compared to traditional spike pulsers of much higher voltage. Controllable damping provides the ability to match transducers to transmitter impedance.

Display

High Brightness, Colour TFT LCD display, A-scan area 255 by 200 pixels, total display area 102.7x 77mm 320x 240 pixels. provides resolution unmatched by other portable flaw detectors. Eight colour combinations with brightness variable up to 300 cd/m2 enabling excellent visibility in the most demanding conditions. All menus are clearly seen without obscuring the A-scan display, Gain settings are continuously displayed in all menus, providing instant access.

Aluminium Case

The MASTERSCAN 335 is housed in a rugged and strong cast aluminium case, which provides excellent durability and compliance with European EMC legislation (CE). The MASTERSCAN 335 will operate in the toughest of environments, providing the user with reliability where and when it matters most

Near Surface Resolution

Near surface resolution is an important aspect of the MASTERSCAN 335 design. A 0-1mm minimum range, high bandwidth and a unique rectifier design enable easy identification of very small near surface defects

Flexible Measurement

Flexible measurement is essential for difficult, high precision applications. The MASTERSCAN 335 provides single echo as well as echo to echo measurements using flank or peak triggering. The 0.001" (0.01mm) resolution includes the option to display trigonometric values for beam path length, surface distance, and depth. For weld inspection there is trigonometric display for beam path length, surface distance and depth.

Interfacing

With its range of interface facilities the MASTERSCAN 335 can be connected to many peripherals. Selectable screen refresh rate of 50 or 60Hz ensures the composite video output is compatible with CCIR/PAL or NTSC devices. Analogue proportional outputs are provided for use with chart recorders or X-Y plotters. An RS-232C bidirectional interface allows connection to printers, PC's or data loggers. RF output and sync signals are provided for connection to an external scope or digitizer.

MASTERSCAN 335

SPECIFICATION

Test Range:	1mm to 20000mm (0.05-800in) at steel velocity. Variable in 1,2,5 sequence, or continuously in 1mm (0.05in) increments. Also from 1 to 5000 (µs).
Velocity:	256m/s to 16000m/s continuously variable.
Probe Zero:	0 to 999.999 µs, continuously variable.
Delay:	Calibrated delay from 0-10000mm in 0.05mm steps at steel velocity (0-400in. in 0.002in steps).
Gain:	0 to 110dB. Adjustable in 0.5, 2, 6, 14 and 20dB steps. Direct access to gain control at all times.
Test Modes:	Pulse echo and transmit/receive.
Pulser:	Variable square wave pulser with two voltage settings; 200V, 20 to 500 nanoseconds and 400V, 100 to 500 nanoseconds. Pulse width adjustable in 1 nanosecond and 10 nanosecond steps.
Damping:	Selectable between 50, 100,180 & 400 Ohms.
P.R.F.:	Adjustable to 35, 63, 150, 250, 500 & 1000Hz maximum.
Update Rate:	60Hz..
Rectification:	Full wave, positive or negative halfwave and unrectified rf.
Frequency Range:	5 Narrow Bands centred at 1MHz, 2MHz, 5MHz, 10 MHz and 15MHz. Broad Band at 0.3 to 20 MHz (-6dB).
System Linearity:	Vertical + 1% Full Screen Height (FSH) Amplifier Accuracy + 0.1dB. Horizontal + 0.4% Full Screen Width (FSW).
Reject:	80% linear reject. LED warning when selected.
Units:	Metric (mm), inch (in), or Time (µs).
Display:	High brightness colour TFT LCD panel. Display area 103 x 77mm (4.05 x 3.03in) 320 x 240 pixels. A-Scan area 255 x 200 pixels for high quality signal display and resolution. Eight colour scheme options. Brightness variable up to 300 cd/m2. Removable screen for easy cleaning. No parallax error.
Gate Monitor:	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 visual and audible alarms.
Measurement Modes:	
Mode 1	Signal monitor
Mode 2	Depth and amplitude of first signal in gate.
Mode 3	Echo-to echo distance measurement.
Mode 4	Trigonometric display of beam path, surface distance and depth of indication.
Mode 5	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. **All measurement functions also available in unrectified rf. mode.**
Gate Expansion:	Expands range to width of Gate 1.
A-Scan Memory:	Maximum of 100 waveforms stored with complete panel settings. Waveforms may be recalled on display, printed or transferred via RS232 serial interface.
Waveform Smoothing:	Gives a smooth envelope signal similar to analogue equipments.
Panel Memory:	20 stores for retaining calibrations.
Thickness Logging:	Storage for 2000 thickness readings configured into Block/Location/Number. Calibration settings stored with each Block. Maximum number of Blocks is 14. Unlimited Location/Number values, maximum combination of 2000 readings. Readings may be reviewed, edited and printed as required.
DAC:	DAC curves may be entered and digitally drawn on the display. Reference, -6dB, -12 dB, -14dB curves may be selected. DAC curve selected acts as gate for alarm outputs and height measurement in DAC +dB. DAC parameters stored with Panel Memory. Curves available for ASME and JIS Codes.
TCG:	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% Full Screen Height.
Auto-Cal:	Provides Automatic calibration from two echoes.
Reference Waveform:	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.
Notes:	Alphanumeric labelling for panel and A-Log allows the user to enter Notes for storage with A-scans.
X-Offset:	Allows the surface distance to be calculated from the front of the probe with X-offset being the distance from the index point to the front of the probe.
Display Freeze:	For capturing current A-scan image.
Peak Memory:	For echodynamic pattern dermination.
Help Key:	For instant operator guidance on using the MASTERSCAN 335.
Outputs:	Full bi-directional RS232C serial interface to transfer parameters, thickness readings and waveform memories. Composite video, full PAL or NTSC compatibility. Analogue proportional output for connection to X-Y plotter or other external equipment. Proportional outputs programmable to distance or amplitude of signal. Unrectified rf signal 80mV peak to peak. Synchronisation output for start of scan. Gate trigger output on relay contact.
Power:	10 'D' size NiCd or alkaline cells. Typically 8 hours duration from fully charged NiCd cells. LED indication of low battery status. A battery pack, which charges in 3 hours, is available as an option or a direct power pack for mains operation
Charger:	Universal mains input 85 to 260 volts A.C. Auto timed charge. 3 hour fast charge for special battery pack. Charger operates unit direct from AC mains.
Transducer Sockets:	BNC or LEMO
Case:	Cast Aluminium Alloy to LM25 (BS1490).
Environmental	To IP65.
Temperature:	Operating –10 to +55°C. 14 to 131° F -20 to +70° C. –4 to 158° F (survivable) Storage -40 to +75° C. –40 to = 167° F
Size:	237 x 135 x 200m (9.3 x 5.3 x 7.9in).
Weight:	4.9 kgs (10.8lbs) with NiCd cells 4.3 kgs (9.4lbs) with Dry Cell Pack.
WINDFD	Software package to allow the transfer of memory storage to Windows based software packages for report writing. Windows 95, 98 and NT operating systems.

Sonatest is the leading European manufacturer of Ultrasonic Flaw Detectors, Thickness Gauges and Transducers. The Masterscan 335 is covered by a comprehensive 2 year warranty and is manufactured under a quality system approved by British Standards Institute to ISO 9002.

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