UniSon – a unified analogue interface and level standard.

UniSon is a new standard proposed by Lindos for use by all manufacturers. The MiniSonic uses the D-connector implementation which offers two-channels (balanced or unbalanced) through a single compact connector where space does not permit the use of XLR's (such as PC sound cards). The full UniSon standard, however, includes a specification of Alignment Levels for professional and consumer equipment as well as limits for input and output impedances and even a quality grading system based on measurements. For full details see www.lindos.co.uk/unison.html

Advantages of UniSon are:

1 It puts two channels on one connector - no more struggling to see which channel is yellow or red (or is it black!).

2 By providing power it makes the use of active adaptors and preamps possible, including powered mics with high level output for use with long leads (a neater equivalent of the 'phantom power' mics used by professionals).

5 By adopting centre grounding it retains compatibility with professional balanced lines, while operating from only 5V rails at low power, facilitating the use of a balanced connection in portable and consumer devices.

6 It facilitates the interconnection of professional and consumer items, often with just a passive connecting lead.

7 It standardises signal levels once and for all, giving manufacturers a chance to simply state that inputs and outputs are 'UniSon compatible'.

Specification

Analyser

Inputs	Two channel 44kohm balanced or 22kohm unbalanced on 'UniSon' D-type socket (with 6-9v 'PowerBus' for Mic preamps etc).
Level measurement	Two channel simultaneous bar graph -20dBu to +9dBu (-30 to+19dBu using ranges) in 1dB steps plus 'over' and 'under'. Extended range with Lin4Win -50dBu to +19dBu with 0.01dB resolution. Accuracy ±0.05dB -20dBu to +19dBu. Quasi-Pk reading as standard with fast option.
Vernier mode	Displays one channel (selectable) plus a vernier ±0.5dB on the shadowbar in 0.05dB steps for precision level line-up when used as a stand-alone unit without a PC.
Frequency display mode	25Hz to 25kHz 1/3rd octave 'shadowbar' bar display with simultaneous level display of selected L or R channel.
Normalise	Press and hold to normalise to any level in range +19dB to -50dB. Toggle normalised or absolute.
PPM mode	Bright, two channel simultaneous display with PPM dynamics to IEC268 type II (BBC) standard. This mode also allows for -60 to +30dB precision variable gain on the loop-through output, which has very low noise (-85dB 468 Q-Pk wtd) and distortion (-90dB) for studio use.
Noise measurement	IEC268 (ITU-468) weighting and Quasi-Pk dynamics, reads -40 to -70dB absolute or normalised. 0 to -90 with Lin4Win. Residual input noise –90dBu wtd.
Distortion residue	Instantly normalises and then nulls the fundamental and measures the residue on a 1kHz tone weighted according to IEC268 (ITU-468 curve and Qpk detector). Display is on a fixed scale -30 to -60dB relative to normalised level. 0 to –80dB with Lin4Win, typical null depth –75dB.
Crosstalk measurement	Measures weighted crosstalk, automatically muting the channel selected, while driving the other at the selected frequency and level. Reads -40 to -70dB (468 Q-Pk Wtd) as for noise. Any frequency selectable.
Sequence mode	Displays the result of a frequency sweep using the 'shadowbar' as up-down cursor with level readings on the main bar. Stores one set of results including 64-point two-channel frequency response. Full results from 16 possible test segments using Lin4Win.
Phase display mode	±180° 20Hz – 20kHz with ±2° accuracy (up to 40kHz with reduced accuracy).

Oscillator

Outputs	Two channel (10 ohm source impedance) balanced centre-grounded 'Unison' on 9pin Dtype plug. Unbalanced with phono or mini-jack leads.
Freq range	4Hz to 40kHz sine in 1/3rd-octaves or 1/12th octaves, 1kHz 5kHz 10kHz square waves.
Level range	-90dBu to +19dBu in 1dB steps, balanced, centre-grounded; -96dBu to +13dBu single-ended. Acuracy ±0.02dB typical @0dB ±0.05dB typical –60dBu to +19dBu
Distortion	-76dB Dist Residue (wtd) (-86dB/0.005% THD) @ 1kHz (22Hz-22kHz BW) typical. Minimum load 600 (-72dB THD).
Flatness	± 0.02dB typical 20Hz to 20kHz, -0.05dB @31kHz, -0.6dB @16Hz and 40kHz.
Mute	Mute, restore, and channel selection. Auto-mute on selecting noise measurement. Auto signal source selection on crosstalk and distortion. Residual noise muted -86dBu ITU-468.
Freq accuracy	±0.05% of specified synthesised frequency.
Sequences	12 Sequences instantly available from the keys including sweeps 20-20k and 40-40k, noise, crosstalk, dist residue at 6 levels to +18dB, noise vs time plot, headroom plot etc.
Line-up segments	Special segments for repetitive GLITS and channel ident tests. Also PPM inverse-weighted tone-burst tests, etc.

General

Size	215 x 160 x 33 mm. Weight 600g.
Display	32-bar LED single-mark display with 'shadowbar' (reduced brightness) for R channel, cursor, or other functions.
Microphone	Dual low-noise microphone inputs (2 minijacks) with 5V power calibrated to UniSon standard (-30dB =100dB SPL. Precision calibrated miniature (1/4") mics available extra.
'Unison'	Input and output sockets carry power (6 to 9V 1A max) on 'PowerBus'.
Headphone socket	3.5mm stereo minijack for headphones 32ohm or greater. Muting of internal speaker for stereo listening.
Power	Slot-in Sony NP500/530/560 style rechargeable lithium-ion battery included (13hrs use) or external 12V (11-14V) smooth DC from 500mA mains adapter via 2.1mm power jack. Battery charges internally in 15hrs (half charged in 4 hrs) with power connected. PP3 with adapter gives 6hrs use.
Monitor loudspeaker	Built-in 65mm speaker and volume control for listening (eg to dist-residue) - monitors L-chan on all measurements.
Accessories included	Manual, 'Unison' to XLR and 'Unison' to phono input and output adapter leads (1m). Lin4WinXP Windows 95/98/NT/2000/XP support software on CD.
Optional extras	Unison to 3.5mm Mini-jack leads, MM1 Calibrated Microphone, Test CD.

Online Resources:

Sequence and Segment Recordings – www.lindos.co.uk/segments

Online Test Sheet Database – www.lindos.co.uk/TestIt.html

Test and Measurement Articles – www.lindos.co.uk/articles.html

Buy Online – www.lindos.co.uk/prices.html

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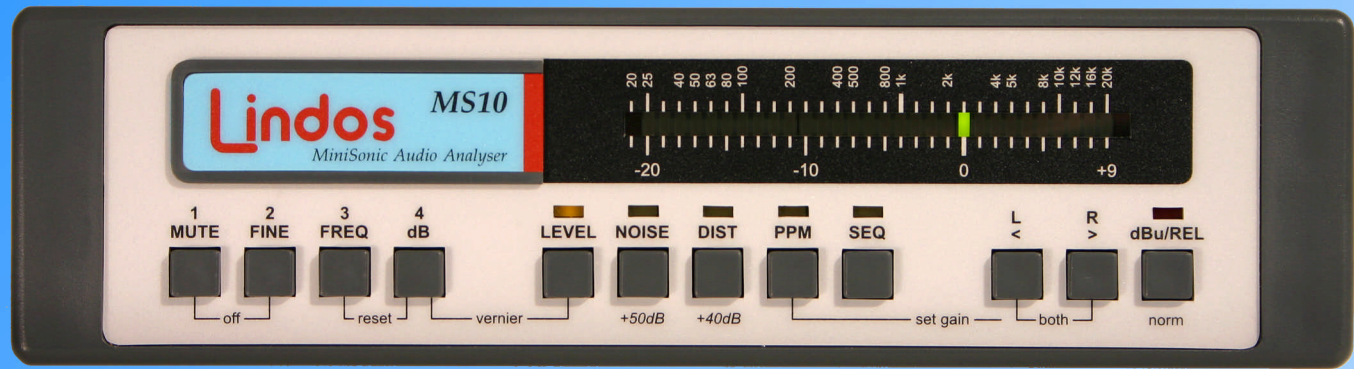## F A S T   A U D I O   T E S T I N G

MiniSonic MS1/MS10

Precision Audio In Miniature

The MiniSonic MS1/MS10 Audio Test Set

Features …

- **Measures audio quality – level, frequency response, noise, distortion, phase and crosstalk**

- **4Hz to 40kHz digitally synthesised generator** with –76dB distortion residue (-86dB THD) @ 1kHz and 0.02dB ripple.

- **+19dBu Out** (balanced) - ideal for testing digital headroom to the IEC limit of +18dB.

- **Precision two-channel level measurement** (0.01dB resolution when using the Windows PC support software).

- **Noise and distortion** measurement with proper perceptually based weighting and quasi peak rectifier (IEC 268/ITU-468) for truly comparable results from all types of equipment.

- **Sweep capability** - simultaneous two-channel sweeps - 20Hz-20kHz, 40Hz-40kHz 5 or 20 second sweeps.

- **Sequences** providing automated testing for all measurement functions (MS10 only)

- **Vernier mode** using a second 'shadowbar' for 0.05dB resolution on the built-in LED display for critical line-ups.

- **Novel 'UniSon' interfaces** (see feature on back page) for instant compatibility with both balanced professional and single-ended consumer levels (XLR and phono leads supplied). 8v power straight from the unison D-type connector enables the easy construction of plug-in modules for mic pre-amps, active filtering, pre-emphasis etc.

- **Bright, true stereo PPM display** IEC 268 type II (BBC standard) dynamics - with stereo gain controlled loop-through output - ideal for setting levels in video post production, or for field recording to camcorders.

- **Stereo low-noise microphone preamps** built-in, with 5V power for calibrated miniature electret microphones to the UniSon standard - for serious use in the recording studio, for voice-over in post production, or for loudspeaker and room measurements.

- **Full remote control** via RS232 port, with supporting free Lin4WinXP software on CD for Windows 95/98/NT/2000/XP.

- **Lithium-ion battery** Sony camcorder battery for 15hrs use, with built-in charging from a 12V power adapter.

- **Novel tilt-panel case** for ideal viewing on the bench, on a shelf, or rack mounted (1.33U by 1/2 width).

- **Headphone amp –** stereo with automatic speaker muting (32ohm – 600ohm)

The MiniSonic MS1/MS10

Audio Analyser/Studio Aid is a complete, hand held, two-channel analogue audio test set. As well as being a quality tester it's a precision line-up tool, a stereo PPM, a balanced-unbalanced converter (both ways), a stereo mic preamp, a headphone amp, and a level converter! Automated measurements can be made through the use of sequences. Sequence testing allows frequency sweeps, noise and distortion measurements and headroom tests to be made with the press of one button.

The 'sequence' of tests can be run at any level and any necessary normalisation is taken care of. Measurement results are stored in the unit and uploaded to Lin4WinXP which presents a standardised results test sheet (see facing page) for viewing or printing.

The MiniSonics represent a new direction for Lindos and despite tiny size and low cost can still generate and measure to +18dBu - a feat unheard of in other battery operated units. While the MS10 includes

automated sequence testing the MS1 provides low cost entry by leaving out all segments but the sweeps. Upgrading to an MS10 requires only replacement of the firmware chip (access via front panel lid).

Although MiniSonic sequences are not currently compatible with the LA100 they run considerably faster because they are two channel and use an improved format so, unless you require the exceptional precision of the LA100, the MS10 may offer everything even professional users need, but at a much lower price.

Lindos Sequence Testing …

Lindos Sequence Testing has become the de-facto standard for telecommunications, broadcasting and production testing around the world. Its simplicity and speed allows any audio path to be evaluated with great accuracy in a matter of seconds.

Whether you are testing microphone circuits or P.A. systems; intercoms or intercontinental satellite links – Lindos sequence testing can cope. The test sequence is built up from test segments and each test segment consists of the audio test signal preceeded by an FSK (frequency shift keyed) header. The header
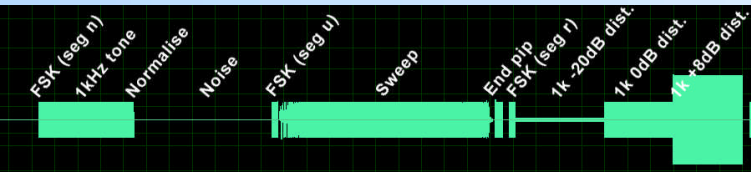
acts as a synchronising trigger as well as identifying the segment code; the measuring side responds automatically and makes and stores the necessary measurements. Since the FSK is sent over the audio path no other communication is necessary between the oscillator and measuring side.

Tests of long lines and satellite links are

easily performed with two MiniSonics.

Where sufficient bandwidth is not available for the (1.7kHz) FSK, as when testing sub-woofers, a direct trigger option is available.

Speed errors on tape are well tolerated by the MiniSonic because each segment is retimed from its own FSK header.

Lin4WinXP - Free to All Users

Lin4WinXP is a software package providing PC support software for the Minisonic. Running under Windows 95/98/2000/XP it offers immediate display of test results, A4 printout, and a comprehensive control panel for manual operation.

Key Features include:

- Autoranging, and manual range selection; features which are not practicable using the limited display facilities of the unit itself.
- Simple keys are provided for things like crosstalk which can only be accessed on the unit by pressing two keys.
- The oscillator also gains two sets of preset keys for frequency and level, all programmable by the user.
- Tolerances can be applied directly to any set of results providing pass or fail indication on each result.
- SyncLink - a continuous data stream format that is sent 110 times a second by the Minisonic tells the software everything about the state of the unit (function selected, relative level set etc) as well as updating the display fast enough for use as a PPM and limited only by the refresh rate of the PC monitor. Both sets of keys; those on the unit and those on the control panel, and both displays, remain active, so either can be used. The RS232 connection can be plugged and unplugged at any time, and the software locks on within about a second; no waiting for egg-timers!

Control Panel

The control panel allows control of all of the MiniSonic's features from the PC. Changing the MiniSonic's output level or frequency,
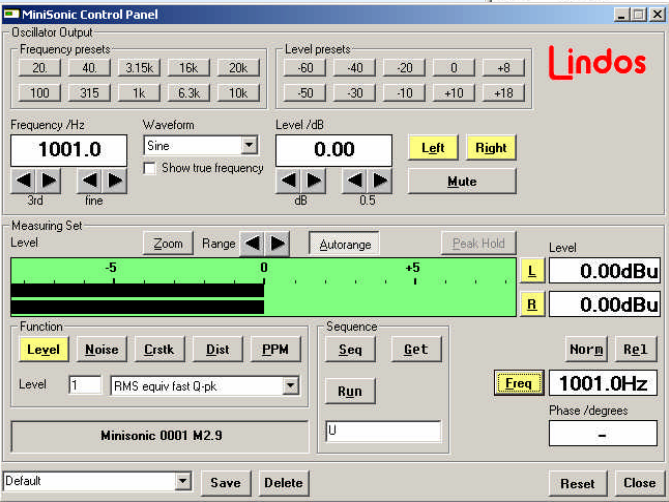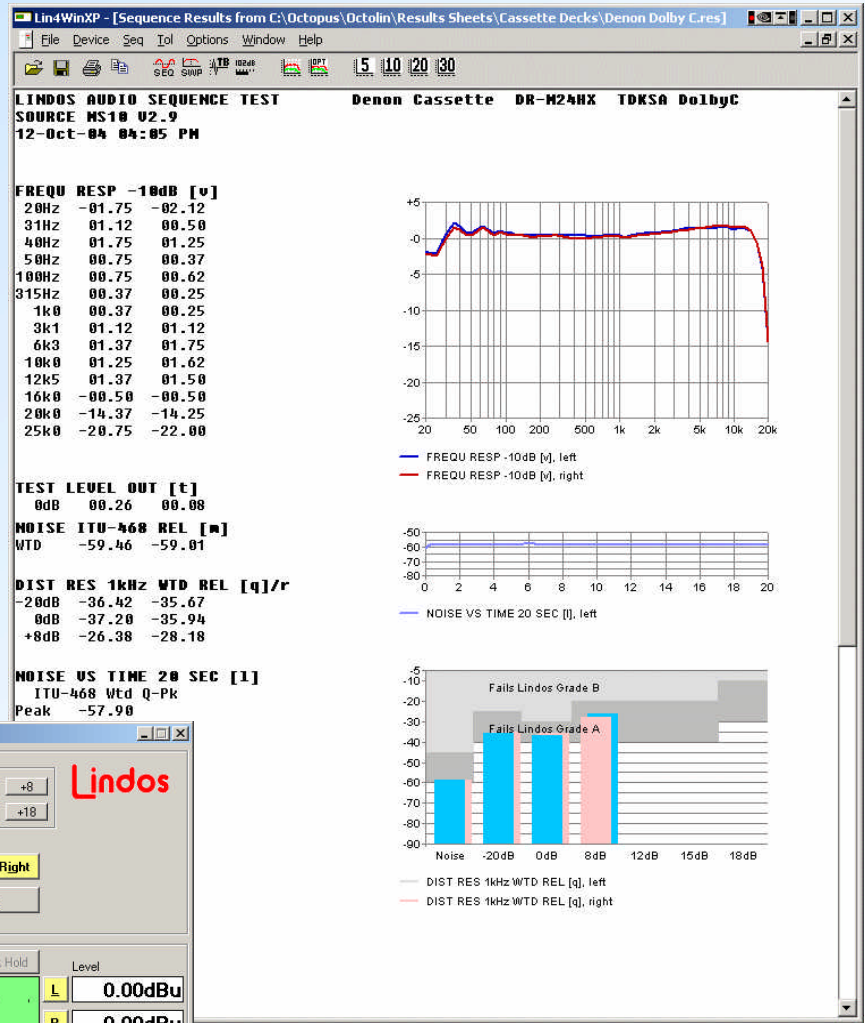
selecting the measurement mode or running a sequence are all just a mouse click away. Sequences are simply run by entering segment letters into a textbox and pressing return.

Results management

Once uploaded from the unit, results can be displayed, saved to disk, printed or exported to other applications using normal cut and

paste techniques. In addition, graphs can be analysed on screen in the 'Graph Viewer' by double clicking on any graph. A live cursor continually updates numeric information about each trace.

The standardised presentation of the default printout allows easy comparison of equipment tests, but graphs can be customised and user comments added as required.