CONFIGURATION OPTIONS

[ON/OFF][2]	CONFIGURATION MENU:
[< dB >]	Select configuration letter (LA101)
[< Hz >]	Change option number (LA101)
[PAGE] & [OPT]	Select configuration letter (LA102)
[< RANGE >]	Change option number (LA102)
[1] to [5]	Set option number to 1-5 (hold [*] for 6-10)
[L/R]	Set option to Lindos/Recommended default
[*][PRINT]	Print LA102 configuration settings
[SEQ]	Exit to manual mode

LA101 configurations are:

B	Default seq. bank (0 - 10)	T	Start up frequency (preset 1-5)
F	Frequency display (rounded/true)	U	Level Units (dBu/dBm, dBV, Volts)
R	Remote baud rate	V	Monitor volume (0-16), if fitted
S	Start up level (MUTE or preset 1-5)	W	Weighting on [*][2]
		Z	Output impedance (10, 75 or 600W)

LA102 configurations are:

A	Auto sequence print	N	Lines per page (1/6" lines)
B	Printer baud rate	P	Printer type
C	Compartments per memory	R	Remote baud rate
D	Distortion units (dB or %)	T	Tolerance
E	Graph width	U	Level Units (dB, dBV, W, V)
F	Graph fit (peak, 0dB, centre)	V	Monitor volume (0-16)
G	Graph scale dB/cm	W	Watts into 8W display
H	Graph height cm	X	Date operation
I	Lines per inch (6-9)	Y	Auto Store Results (in memory...)
J	Graph normalisation	Z	Input impedance (600W or 10kW)
M	Top margin (1/6" lines)		

MEASUREMENT OPTIONS

LEVEL
1 RMS 2-100kHz
2 RMS 22-22kHz
3 VU 22-22kHz
4 Twin level and phase bar graphs
5 PPM 22-22kHz
6 VU, A weighted
7 RMS, A weighted
8 VU 2-100kHz
9 RMS 2-100kHz slow averaging
10 PPM 2-100kHz
11 RMS 400-100kHz
12 RMS 400-22kHz
13 VU 400-22kHz
14 Twin bar, 400-100kHz
15 PPM 400-22kHz

NOISE
1 CCIR468-3 weighted quasi-peak
2 CCIR468-3 unweighted quasi-peak
3 RMS 22-22kHz
4 RUMBLE unweighted, slow
5 RUMBLE weighted, slow
6 CCIR weighted, ARM-1k
7 CCIR weighted, RMS
8 A weighted, RMS
9 CCIR weighted, ARM-2k
10 2Hz-100kHz, quasi-peak
12 CCIR unweighted, 400Hz-22kHz
13 RMS, 400Hz-22kHz
14 CCIR unweighted PPM
15 CCIR weighted PPM

Hold [*] and press 1-5 for options 6-10. Press [>] to select options 11-15 and [<] to return to options 1-5. For example, press [LEVEL] [OPTION] [4] for the twin bar graph.

CROSSTALK
1 100Hz narrow band, RMS
2 315Hz narrow band, RMS
3 1kHz narrow band, RMS
4 6.3kHz narrow band, RMS
5 10kHz narrow band, RMS
6 40Hz narrow band, RMS
7 150-300Hz narrow band, RMS
8 2k-20kHz narrow band, RMS
9 15kHz narrow band, RMS

DISTORTION
1 100Hz RMS THD, 200Hz-22kHz
2 315Hz RMS 3rd harm, narrow band
3 1kHz RMS THD, 2k-22kHz
4 6.3kHz RMS THD, 12k-22kHz
5 10kHz RMS THD, 20k-22kHz
6 40Hz RMS 2Hz-400Hz
7 1kHz RMS 3rd harm. - experimental
8 1kHz notch only, 22-22kHz
9 6.3kHz notch only, 22-22kHz
10 10kHz notch only, 22-22kHz
11 100Hz CCIR weighted quasi-peak
13 1kHz CCIR weighted quasi-peak
14 6.3kHz CCIR weighted quasi-peak
15 10kHz CCIR weighted quasi-peak

WOW & FLUTTER etc
1 W&F IEC386 weighted quasi-peak
2 W&F IEC386 unweighted q-peak
3 Q-D 40Hz CCIR weighted q-peak
4 Q-D 40Hz RMS, 400Hz-22kHz
5 Difference freq dist, 2nd order, 70Hz
6 W&F weighted RMS
7 W&F unweighted RMS
8 FIM (fequency intermod)
11 Speed (3150Hz reference)
12 Speed (3125Hz reference)

LA101 MANUAL MODE

[< Hz >]	Frequency up/down in third octave steps
[< dB >]	Level up/down in 1dB steps
[*][< Hz >]	Frequency up/down in fine steps, 32 per octave
[*][< dB >]	Level up/down in 0.01dB steps
[1] to [5]	Presets: frequency after [<Hz>], level after [<dB>]
[L/R]	Channels: Both (L+R), Left or Right
[MUTE]	Mute output (with selected impedance)
[*][Z]	Output impedance: 10W (rear XLRs only), 75W, 600W (front jack sockets only)
[*][SQ]	Sine/square waveform
[*][1]	Set/clear Test Level (for relative levels)
[*][2]	Weighting curve (see configuration W)
[*][3]	ZC - level correction for 600W load MC - level correction for matched load HC - level correction for 10kW load
[*][4]	Waveform: DC0, DC+, DC-, TRI, SAW
[*][5] [n]	Program preset n (1-5) with current frequency after [< Hz >] or current level after [< dB >]
[MUTE][< Hz >]	Change monitor volume (if fitted)
[MUTE][n]	Special frequency (eg [MUTE][5] is 22.4905kHz)

LA102 MANUAL MODE

[LEVEL]	Measure level, frequency and phase
[NOISE]	Measure noise
[CRSTK]	Measure crosstalk
[DIST]	Measure THD (315Hz is third harmonic only)
[W&F]	Measure W&F, QD, Diff. Freq. Dist., speed etc
[OPTION] [n]	Select option for above measurements. Hold [*] for options 6-10. Press [>] for options 11-15. See Measurement Options table on next page é
[< RANGE >]	Set and lock range. Autoranging is enabled by pressing a Measure key.
[L/R]	Left/right channel select
[LISTEN]	Monitor speaker on/off
[LISTEN][>]	Increase monitor volume
[LISTEN][<]	Decrease monitor volume
[*][Z]	Input impedance: 600W or 10kW
[*][UNITS]	Units: dBu/dBm, Watts, dBV, Volts
[*][TL]	Set/clear the Test Level (for relative levels)
[*][PKH]	Peak hold mode (PKH/OFF)
[*][FIX]	FIX/AUTO range
[*][HPF]	400Hz High pass filter (on level options 1-5)
[*][5]	Expanded bar graph (ZOOM/NORM)
[*][LISTEN]	Print displayed level and frequency

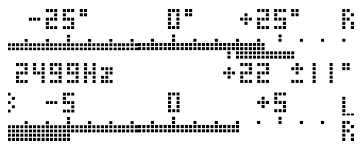
The bar graph always shows the absolute level in dBu except when dBV units are selected when it shows absolute dBV.

SETTING THE LA102 DATE

[ON/OFF][4]	DATE EDITOR
[<] & [>]	Change the day, month or year at cursor
[OPT] & [PAGE]	Move cursor left/right (day, month, year)
[SEQ]	Exit to Manual Mode

Set configuration X1 or X2 to print the date.

Lindos



LA100 REFERENCE CARD

The LA100 Audio Analyser operates in two distinct modes, manual mode and automatic sequence mode, switched by pressing the [SEQ] key. The sequence results are displayed on the unit's LCD and may be printed by connecting an Epson, IBM or Hewlett Packard compatible printer to the RS232 socket on the LA102. A computer is not necessary for manual or automatic testing, although full computer control is possible.

Tapping the [ON/OFF] key briefly on either unit will reset it to its power-on state determined by CONFIGURATION OPTIONS held in non-volatile memory. Many apparent faults such as failure to print, incorrect preset frequencies or levels, failure to start up at 1kHz etc can be the result of re-configuration, either accidentally or by another user. To reset all settings to their default, hold [ON/OFF] and press [3] to obtain the RESET MENU and then press [1].

[KEY] [n] means first press [KEY] and then press [n]
[*][KEY] means hold [*] and press [KEY], in particular:
[*][1] to [*][4] are used for the numbers 6-9 and [*][5] for 0 or 10.
Most keys repeat if held for a short while.

The units are always on while mains power is connected. They may also be powered from the built-in NiCd batteries which are switched on/off by pressing the [ON/OFF] key for at least ¼s. A '**B**' is displayed when battery power is on.

[*][ON/OFF]	Battery lock (disables 5 minute auto switch-off)
[MUTE][ON/OFF]	Turn LA101 on with output MUTEd.

LA101 RESET MENU

[ON/OFF][3]	RESET MENU:
[1]	Reset all but sequence definitions & source ID
[2]	Reset frequency and level presets to defaults
[3]	Reset configuration options to default values
[4]	Reset sequence definitions & source ID

LA102 RESET MENU

[ON/OFF][3]	RESET MENU:
[1]	Reset all but results and user tolerances
[2]	Reset measurement options & [*][FIX] ranges
[3]	Reset configuration options to default values
[4]	Clear sequence results in memory 0
[5]	Clear user tolerance definitions (1-5)

Fourth Edition, LA100 V6.7 software

Lindos Electronics
Saddlemakers Lane
Melton
WOODBRIDGE
Suffolk IP12 1PP
ENGLAND
Telephone: +44 1394 380307
Fax: +44 1394 385156
email: info@lindos.co.uk
www: http://www.lindos.co.uk/

LA101 SEQUENCE MODE

[SEQ]	PREPARE TO RUN A SEQUENCE:
[L/R]	Channels: Both (L+R), L or R
[1] to [5]	Run sequence 1 to 5 (or [<][dB] For menu)
[*][1] to [*][5]	Run sequence 6 to 10
[*][SEQ]	Run a single segment
[MUTE]	Stop sequence (hold key until unit stops) if running, or repeat the last sequence/segment.

Sequences are relative to the Test Level set in manual mode.

LA102 SEQUENCE MODE

[SEQ]	PREPARE TO RECEIVE A SEQUENCE:
[*][SEQ] [n]	Receive a single channel sequence and store in register 1 or 2, leaving the other alone.
[*][LPF]	Select 22Hz-22kHz filter
[SEQ]	Exit to manual mode

Sequences are independant of manual measurement option, range, Test Level and channel settings.

Example: To run sequence 1, press [SEQ] on the LA102 and then [SEQ] [1] on the LA101. Press [PAGE] to see the results:

SEQUENCE RESULTS

[PAGE]	DISPLAY RESULTS:
[*][PRINT]	Print results on printer
[*][PRINT] [*][n]	Print n copies of results (1-5)
[LEVEL]	Test Level results
[NOISE]	Noise results
[CRSTK] etc	Crosstalk results etc
[PAGE]	Page through results: (Source), Freq. response, TL, Noise, Crstk, MOL, Dist, W&F, Phase
[OPTION]	Page backwards through results
[<] & [>]	Move frequency cursor over graph
[*][<]	Compress graph scale (zoom out)
[*][>]	Expand graph scale (zoom in)
[L/R]	Display left/right graphs
[*][L/R]	Display difference graph (R-L or 2-1)
[*][TL]	Set/clear the graph Test Level (normalisation)
[*][UNITS]	Display distortion results in dB or %
[*][MEM]	MEMORY MENU:
[*][1] [n] ...	Show **status** of memory n... (1-5)
[*][2] [n]	**Store** results in memory n (1-5)
[*][3] [n]	**Recall** results from memory n (1-5)
[*][4] [n]	**Exchange** results with memory n (1-5)
[*][5] [n]	**Subtract** memory n (1-5) from results

USING TEST TAPES & DISCS

[SEQ] [OPT] [2]	TEST TAPE MODE (discrete tones & speech)
[SEQ] [OPT] [3]	FREQUENCY SWEEP MODE (no speech):
[L/R]	Manual channel select (when sweep is on both)
[PAGE]	Display interpolated frequency response graph

The LA102 can be used with any test tape or disc. Results will be stored as sweep segment U and may be displayed, printed or checked against a tolerance in the usual way (see above).

EDITING SEQUENCES

[ON/OFF][1]	LA101 SEQUENCE EDITOR:
[1] to [5]	Edit sequence 1-5 (hold [*] for 6-10)
[*][SEQ]	Edit FSK source ID (sent with sequence)
[SEQ]	Exit to manual mode

See below for editor keys

EDITING TOLERANCES & HEADING

[ON/OFF][1]	LA102 TOLERANCE EDITOR:
[*][SEQ]	Edit printout heading (up to 40 characters)
[1] to [5]	Edit tolerance 1-5 (hold [*] to view 6-10)
[<] & [>]	Select tolerance to edit or view (1-15)
[PAGE]	Edit/view selected tolerance
[*][PRINT]	Print all tolerance definitions
[SEQ]	Exit to manual mode

See below for editor keys

EDITOR KEYS

[< Hz >]	Cycle through characters (LA101)
[< dB >]	Move cursor (hold [*] to move by a screen)
[*][Hz >]	Go to '+' and cycle through LA101 symbols
[*][< Hz]	Go to 'Z' and cycle through LA101 letters
[< RANGE >]	Cycle through characters (LA102)
[PAGE] & [OPT]	Move cursor (hold [*] to move by a screen)
[*][RANGE >]	Go to '+' and cycle through LA102 symbols
[*][< RANGE]	Go to 'Z' and cycle through LA102 letters
[L/R]	Insert a space at the cursor
[*][Z]	Delete character at the cursor (Zap!)
[1] to [5]	Enter digit 1-5 (hold [*] for 6-9 and 0)
[*][MUTE] [n]	Copy current sequence to sequence n, 1-10
[*][LISTEN] [n]	Copy current tolerance to user tolerance n, 1-5
[SEQ]	Exit to manual mode
[*][SEQ]	Return to edit menu

Character order is:

_ABCDEFGHIJKLMNOPQRSTUVWXYZ
bcdhkmnoruxz@!?%:<>=±]/+-.0123456789,"

LA101 USER WEIGHTING EDITOR

[ON/OFF][4]	WEIGHTING EDITOR:
[1] to [5]	Edit weighting 1 to 5 (hold [*] to view 6-10):
[< Hz >]	Move the cursor in third octave steps
[< dB >]	Change weight by ±1dB (hold [*] for 0.01dB)
[*][< Hz >]	Change the graph scale (zoom in/out)
[L/R]	Copy the current weight to the next one
[1] to [5]	Set the weight to the preset level
[*][L/R]	Invert the entire weighting curve
[*][1]	Normalise the curve to the cursor frequency
[*][MUTE] [n]	Copy the weighting curve to a user one (1-5)
[*][SEQ]	Select a new weighting curve to edit
[SEQ]	Exit from the editor

Set configuration W to the weighting number and use [*][2] (in manual mode) to select the weighting.

TEST SEGMENTS

Seg	Measurement	Default Level	Time	Vals
A	Crosstalk 40, 100, 315, 1k, 6.3k, 10kHz	0dB/50us	6s	6
B	Crosstalk 100, 1k, 6.3k, 10kHz	0dB	2s	4
C	Crosstalk 40, 100, 315, 1k, 6.3k, 10kHz	0dB	6s	6
D	Distortion 100, 1k, 6.3kHz	+8dB	6s	3
E	Distortion 100Hz +9dB, 1kHz -10dB, 1kHz +9dB	-10/+9dB	6s	3
F	Distortion 40, 100, 315, 1k, 6.3k, 10kHz	+8dB	18s	6
G	Distortion 40, 100, 315, 1k, 6.3k, 10kHz	+8dB/50us	18s	6
H	3% MOL at 1kHz	0 to 8dB	8½s	1
I	Distortion 100 +8dB, 1k +8dB, 100 -10dB 1k -10dB	+8/-10	8s	4
J	Crosstalk 40, 100, 315, 1k, 6.3k, 10kHz	-10dB	6s	6
K	User levels 1kHz	0 to -50dB	6s	6
L	Noise RMS, A weighted and unweighted		8s	2
M	Noise CCIR468-3 peak wtd, peak unwtd and mean wtd		30s	3
N	Noise CCIR468-3 peak wtd, peak unwtd and mean wtd		8s	3
O	Sweep 20Hz-20kHz (British Telecom spec EPS84)	-10dB	5s	26
P	Sweep 20Hz-20kHz (18dB headroom)	-20dB	5s	20
Q	Sweep 20Hz-20kHz (18dB headroom)	-12dB	5s	20
R	Sweep 20Hz-20kHz (18dB headroom)	-10dB	5s	20
S	Sweep 20Hz-20kHz (18dB headroom)	-10dB	20s	20
T	Test level, 1kHz 0dB	0dB	1s	1
U	Sweep 20Hz-20kHz (8dB headroom)	0dB	5s	20
V	Test level, 400Hz 0dB	0dB	1s	1
W	Wow & flutter, 3.125kHz pk wtd, mn wtd, spd & phase	0dB	12s	4
X	Fast sweep 20Hz-20kHz	0dB	1½s	20
Y	Phase 40, 100, 1k, 6.3k, 10k, 15kHz (Mean)	0dB/50us	3s	6
Z	Phase 40, 100, 1k, 6.3k, 10k, 15kHz (Mean)	0dB	3s	6
c	Crosstalk 15kHz	0dB	3s	1
d	Difference freq. distortion, 70Hz, 2nd order at 1kHz	0dB	2s	1
h	3% MOL at 315Hz	0 to 8dB	8½s	1
o	Sweep 300Hz-18kHz	0dB	5s	19
r	Sweep 30Hz-4kHz	0dB	5s	22
u	Sweep 10Hz-30kHz	0dB	5s	24
x	Sweep 300Hz-8kHz	0dB	5s	15
z	Phase 40, 100, 315, 1k, 6.3k, 10k, 15kHz (Mean)	0dB	3½s	7

CONTROL SEGMENTS

!*f,d,l*	Tone bursts/tone sets. !freq,duration,level,freq... (in Hz, ms & dB)
+"text"	Send text message to the LA102 measuring set, up to 21 chars
"text"	Display text message on the LA101 display, up to 21 characters
<	Repeat last segment, until interrupted by a key press
<<	Repeat whole sequence, until interrupted by a key press
±*n*	Select tolerance *n* (1-16) in the LA102
%*n,m*	Set output impedance *n* (10, 75 or 600) in ohms and ZC mode *m*
/*n*	Set oscillator test level to *n* dBu.
:*n,m*	Select physical output channel *n* and logical channel *m*
>*n*	Run sequence *n* as a sub-sequence and then continue
?	Pause until a key is pressed on the LA101

EXAMPLES

Example sequence: A 5s sweep at -10dB, distortion at six frequencies at +4dB, CCIR weighted noise, W&F and phase:

"EXAMPLE" TRF+4NWZ

Example tone burst: A 315Hz 20ms tone burst at -4dB, 5s of silence and a 2kHz 50ms tone burst at +6.7dB:

"BURSTS" "315Hz"!315,20,-4,0,5000 "2kHz"!2000,50,+6.7

Example tolerance: Test level 0±0.5dB, distortion below -56dB (all frequencies) and frequency response -1±2dB below 100Hz, 0±0.5dB for 100Hz-6.3kHz and not specified above 6.3kHz:

"TAPE CHECK" T±.5 DF-56 PQRSUX-1±2,,,,±0.5,,,,?