DLM 26 – Digital Loudspeaker Management

The DLM26 is a DSP based 2 input x 6 output Digital Loudspeaker management processor, ideally suited for fixed installations and live events. It combines the functions of a multitude of conventional products in a compact 1U unit with extensive PC remote control capabilities.

Features Superb audio quality with premium hi-end AKM5392 24bit A/D converters and AKM 4396 24bit D/A converters, carefully optimized double precision signal processing coupled with 24bit conversion ensure a dynamic range >110db
The unit can work in STANDARD MODE or in DCL MODE. The first mode permit to configure the crossover in 2x2 way + SUB, 2x3 way or 6way, the input L, R, L+R are freely assignable to each output.

In DCL mode the unit can be configured in 3ch DCL, 2ch DCL + 2ch standard, 1ch DCL + 4ch standard. DCL mode mean double compressor limiter, each DCL channel have a double band limiter and compressor with assignable LO/HI split frequency. This is an exclusive feature in digital processor and it's very useful to protect two way passive filters with no passive attenuation in the crossover between LF woofer and HF driver. With DCL mode is possible to set two different threshold of protection for woofer and driver with the split frequency corresponding to the passive crossover frequency.

Each input has 5 fully configurable filters, a delay of 288.66ms max in step of 6.8us, gain.
Each output has 4 fully configurable filters, a delay of 288.66ms max in step of 6.8us, gain, phase, LO-pass/Hi-pass crossover from 6 to 24db/Oct with standard or custom Q, RMS compressor with soft knee and peak limiter.

The 2 input levels are displayed by rows of 6 level LED + 1 clip led, the 6 output levels are displayed by rows of 5 level LED + 1 clip led + 1 Limiter led. The unit has 2 analog inputs, a stereo digital SPDIF input, and 6 analog outputs.
Linking functions between inputs and linking functions between outputs are available.

A function is allowing to have ramps closing the output level on parameter changes, when the unit is used as installation unit; this function can be excluded when the unit is used live and it is necessary to perform small changes to the set parameter...on the fly.

The Pc SW for the remote control via RS485 or USB is allowing to connect in net up to 32 units and is allowing to control full parameters of the processor, to show the phase of the filter setting

and to adjust graphically the RMS compressor and the Peak limiter. The comprehensive standard specification also include up to 64 memories with security lockout and two password level settings.

Special and new features:

- Hi-pass/Lo-pass/Shelving **custom Q** second order filters
- **RMS compressor and PEAK limiter on each output channel** with time constant and algorithm optimized for speaker thermal and mechanical protection while maximizing the output with no audible distortion
- **Input channel L, R or L + R freely assignable to each output channel**
- **Double Compressor Limiter Mode (DCL)** with two band RMS compressor and Peak limiter with adjustable HP / LP split frequency and separate parameter adj. This is an exclusive and very useful feature in general purpose digital processors
- **ALL PASS first and second order filters** useful for Cardioid SUB configurations, very precise phase crossover alignment, special pattern control array, alignment between different speakers and systems.

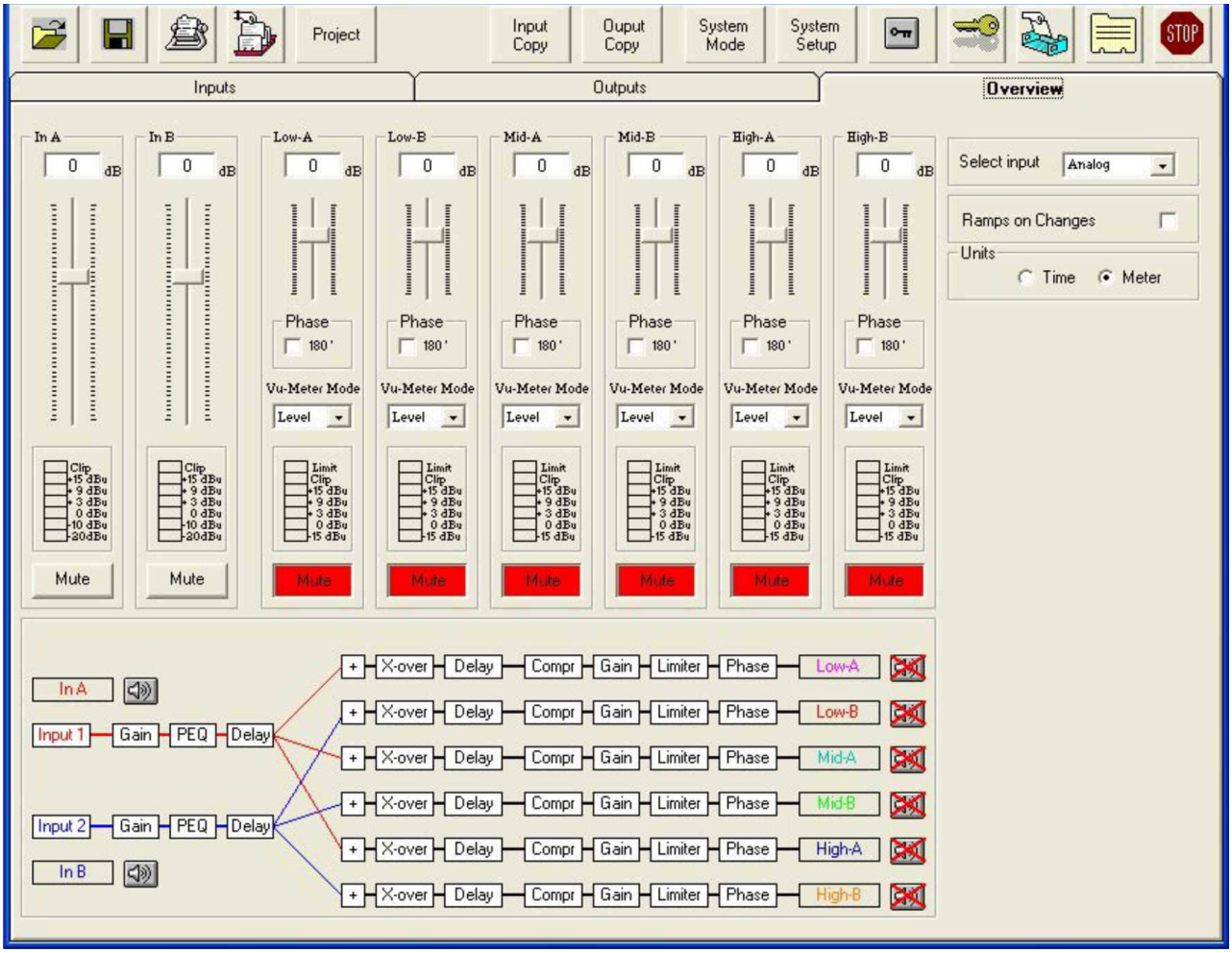
Specifications	
Inputs:	XLR balanced +20dbu max level
Outputs:	XLR balanced +20dbu max level
Minimum Load:	150ohm
Total memories:	64
VU metering:	7 led for Inputs [-20dBu up to +15dBu; Clip] 7 led for Outputs [-20dBu up to +15dBu; Clip; Limit] Output Led can be used for displaying the Output level OR the Limiter activity
THD+N:	0.001% at 1kHz 0dBu
S/N:	>110dB
Frequency Response:	20Hz and 20kHz @ -0.5db
A/D and D/A Resolution:	24bits
Process Resolution:	24x32 bit for filtering process; 96 bits resolution on intermediate computation results
SPDIF input:	32 – 44.1 – 48Khz accepted
Display:	Graphic 2x20 characters
Filters (5 each in/out)	
Type:	Peaking EQ, Hi-Shelving 1/2/Q, Lo-Shelving 1/2/Q, HPF 1/2/Q, LPF 1/2/Q, All Pass 1/2 , Band pass, Notch
orders:	symmetrical Bell or High/Low Shelving up to second

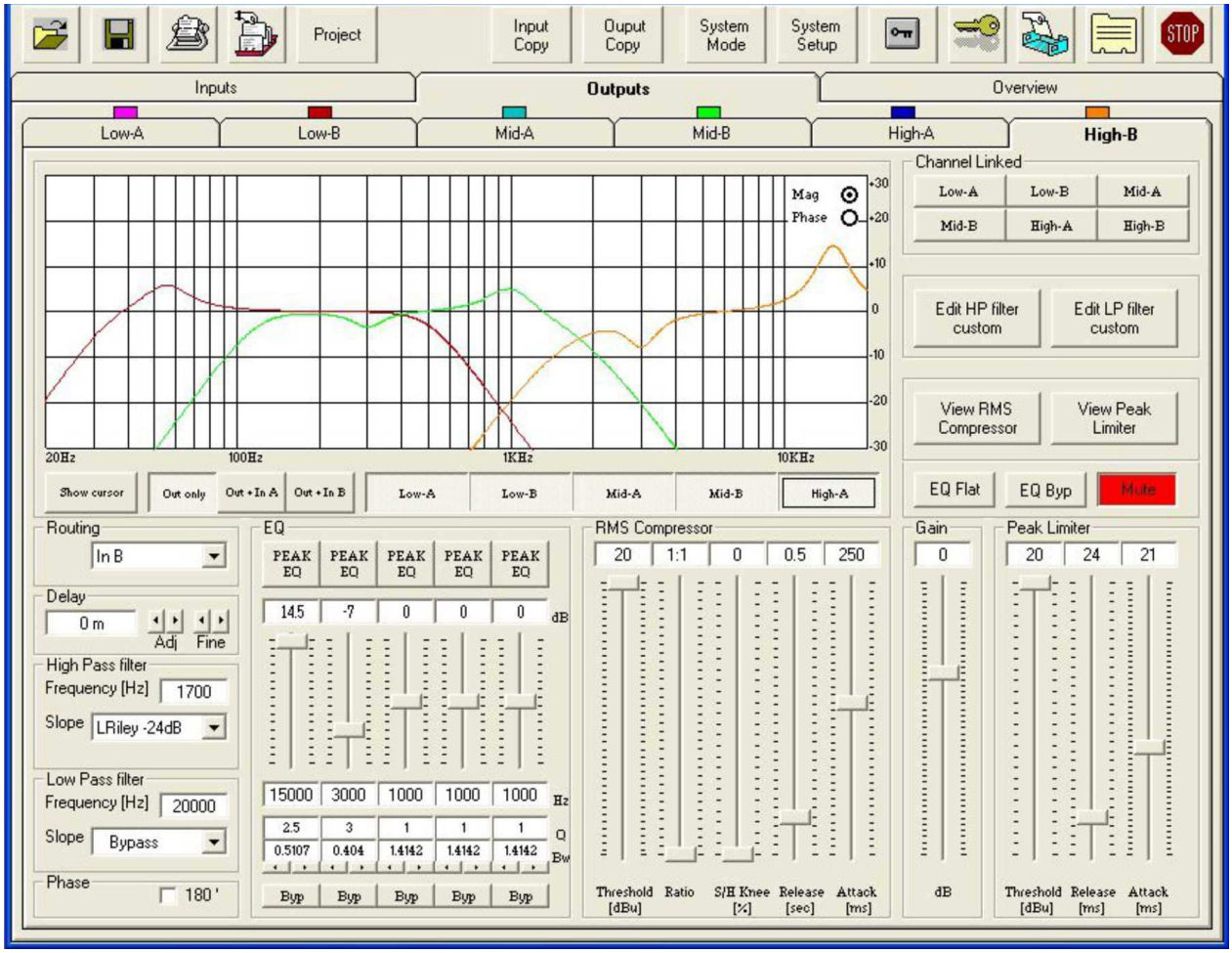
	order
Filter gain:	for Bell and Shelving the gain is ranging from -15dBu up to +15dBu by 0.5dBu resolution steps
Centre frequency:	selectable with a 1/24th of octave resolution steps from 20Hz up to 20kHz
Filter Q/BW:	Q from 0.05 up to 3 by 0.05 resolution steps
Compressors	
Threshold:	-10 to +20dbu
Ratio:	1:1 to 32:1
Soft Knee:	0 to 100%
Attack Time:	10ms to 4s
Release Time:	0.1 to 3s
Limiters	
Threshold:	-10 to +20dbu
Attack time:	2ms to 50ms
Release Time:	20ms to 200ms
High pass and Low Pass Filters	
HPF:	from 1st order (Butterworth -6dB/Oct) up to 4th Order (Butterworth, Linkwitz or Bessel -24dB/Oct), Custom Q
LPF:	from 1st order (Butterworth -6dB/Oct) up to 4th Order (Butterworth, Linkwitz or Bessel -24dB/Oct), Custom Q
Filter's setting step:	1/24th of octave
Delay & Gain	
Maximum Delay:	288.66ms by 6.8us increment/decrement step, on each Input and Output channel
Spdif input gain(Digital):	0dBu on RCA connector
Phisical:	
Net Dimensions (WxHxD):	48 x 4 x 22 cm - 19" (1U rack)
Net Wheight:	2.8 Kg
Transport Dimensions (WxHxD):	53 x 10 x 31 cm
Transport Wheight:	3.9Kg
Power Requirements	
Voltage	90 – 240Vac 50/60Hz
Power	30VA

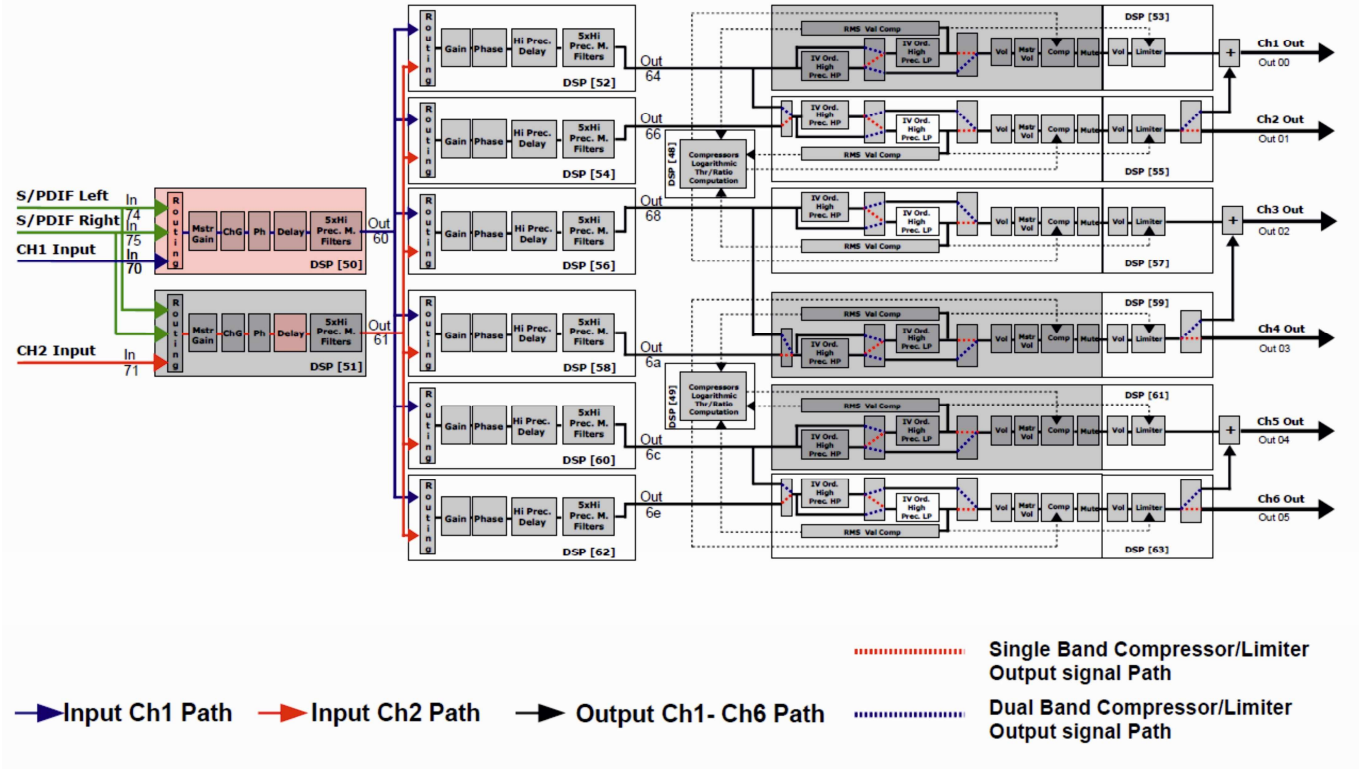
Front Panel:

Rear Panel:

PC software screenshots:




Project
Input Copy
Ouput Copy
System Mode
System Setup
STOP
Inputs
Outputs
Overview
Low-A
Low-B
Mid-A
Mid-B
High-A
High-B
Mag
Phase
+30
+20
+10
0
-10
-20
-30
20Hz
100Hz
1KHz
10KHz
Show cursor
Out only
Out + In A
Out + In B
Low-A
Low-B
Mid-A
Mid-B
High-A
Channel Linked
Low-A
Low-B
Mid-A
Mid-B
High-A
High-B
Edit HP filter custom
Edit LP filter custom
View RMS Compressor
View Peak Limiter
EQ Flat
EQ Byp
Mute
Routing
In B
Delay
0 m
Adj
Fine
High Pass filter
Frequency [Hz]
1700
Slope
LRiley -24dB
Low Pass filter
Frequency [Hz]
20000
Slope
Bypass
Phase
180 '
EQ
PEAK EQ
14.5
-7
0
0
0
dB
15000
3000
1000
1000
1000
Hz
2.5
3
1
1
1
Q
0.5107
0.404
1.4142
1.4142
1.4142
Bw
Byp
RMS Compressor
20
1:1
0
0.5
250
Threshold [dBu]
Ratio
S/H Knee [%]
Release [sec]
Attack [ms]
Gain
0
dB
Peak Limiter
20
24
21
Threshold [dBu]
Release [ms]
Attack [ms]

Block Diagram:

"FBT DLM26"