

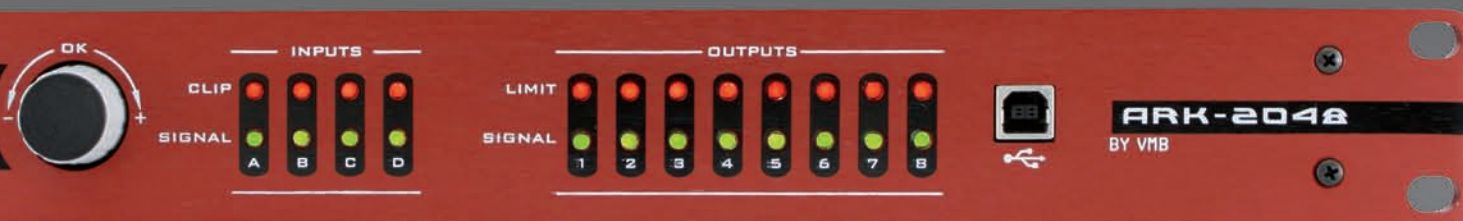
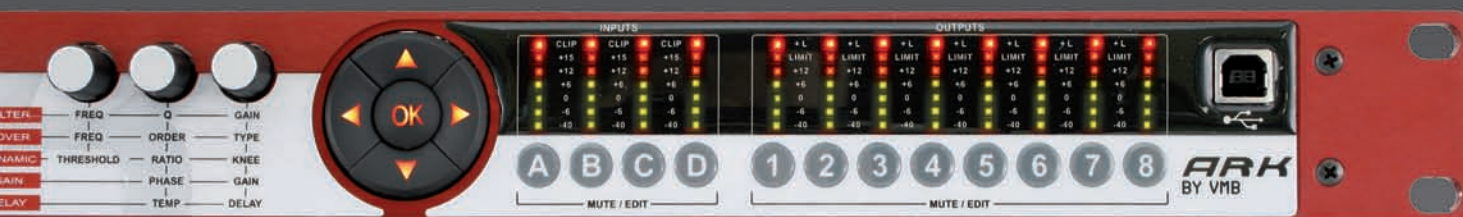
INPUTS

CLIP	CLIP	CLIP	
+15	+15	+15	
+12	+12	+12	
+6	+6	+6	
0	0	0	
-6	-6	-6	
-40	-40	-40	

OUTPUTS

+L	+L	+L	+L	+L	+L	+L	+L
LIMIT	LIMIT	LIMIT	LIMIT	LIMIT	LIMIT	LIMIT	LIMIT
+12	+12	+12	+12	+12	+12	+12	+12
+6	+6	+6	+6	+6	+6	+6	+6
0	0	0	0	0	0	0	0
-6	-6	-6	-6	-6	-6	-6	-6
-40	-40	-40	-40	-40	-40	-40	-40

- A
  - B
  - C
  - D
  - 1
  - 2
  - 3
  - 4
  - 5
  - 6
  - 7
  - 8
- MUTE / EDIT



The ARK-70 and ARK-20 are the latest in the series of digital processors designed, assembled and manufactured by VMB offering 7 different models with 2 or 4 inputs each and with up to 8 outputs (analogue or digital and Ethersound optional).

Double Dynamics are standard in all ARK-70 models. An RMS limiter is used to adjust the transducer reproduction level, maintaining the original dynamics whilst at the same time respecting the original transients and achieving a better acoustical result. A Peak limiter controls the movement of the speaker, protecting it from any damage and also reducing distortion caused by over-excursion. These double dynamics lower levels of distortion and provide protection for all the speaker components and internal electronics.

With 0.6ms fixed latency the ARK-70 is one of the lowest latency processors available. All ARK units deliver a wide dynamic range of 120dB, high performance Cirrus Logic AD & DA 24bit converters running at 96kHz. The internal DSP processing works with double precision in floating point, achieving an internal resolution of 56 bits, one of the largest resolutions available on the market today. This enables the use of high precision filters with extremely low distortion delivering unbeatable sound clarity and quality.

The ARK-70 offer atmospheric compensation – essential when working outdoors where temperature and humidity varies considerably between night and day causing noticeable loss in high frequency, especially at long distances. Each output can be configured separately depending on the throw required from each cabinet.

Digital processors are not easy to use. For that reason the ARK software has been designed for fast user access

to make each processing zone simpler for the user. The Compare function option enables the user to listen to the difference between 2 complete set-ups in real time with no fade-ins or fade-outs. As well as being able to import measurement curves from the principal systems (SMART LIVE, CLIO, SAT Live etc), they can also be seen directly in the final frequency response window showing the effects of the process applied. All ARK processors can be configured and monitored in real time by USB or ETHERNET.

All ARK units can import/export complete channel parameters from/to VMB's Rainbow Prediction Software (See P.16). This enables the user to apply a complete signal process with just one click.

Security features include different levels of access restrictions which can be administered via global password and preset password with the option of choosing which processing zones can be modified or not. The front panel can also be blocked denying any access.

Each input has up to 29 filters bands of Graphic EQ and in ARK-70 versions they can be switched to Parametric EQ. Each output also has Parametric EQ which can be chosen between adaptable or constant Q, All Pass, Band Pass, Notch, HP Q, LP Q or High and low Shelves providing flexibility. Moreover, crossover filters with high and low cuts of Linkwitz Riley, Bessel, Butterworth up to 48 dB/oct slopes in 6 dB steps are available. A 6 dB/octave slope, for instance, corresponding to a first order filter, allows for frequency shading.

Other features include polarity, gain and delay on ins and outs, routing of any input to any output and a signal generator with sine and noise (pink or white).



### NAVIGATION BUTTONS

These 5 buttons enable the user to navigate between the different configuration options and together with the encoders adjust each parameter.

### ENCODERS

The 3 encoders allow direct access to modify in real time all parameters selected from the display.

### MUTE/EDIT BUTTONS

Are used to select the channel which you want to modify if editing a preset or to directly mute the channel.

### LEVEL METERS

There are 7 indicator Leds per input/output.  
In the inputs the first 6 Leds indicate that there is level. The 7th Led (at the top) indicates if the input is clipping.  
For the outputs, the first 5 Leds indicate that there is level. The 6th Led indicates that it is starting to

limit/compress. The 7th Led is configured from the menu and lights up when the configured compression is exceeded.

### USB

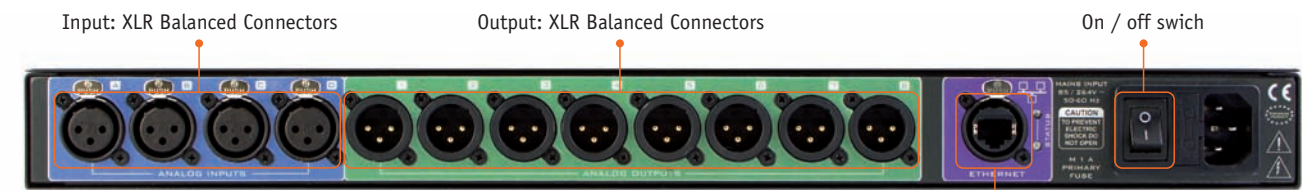
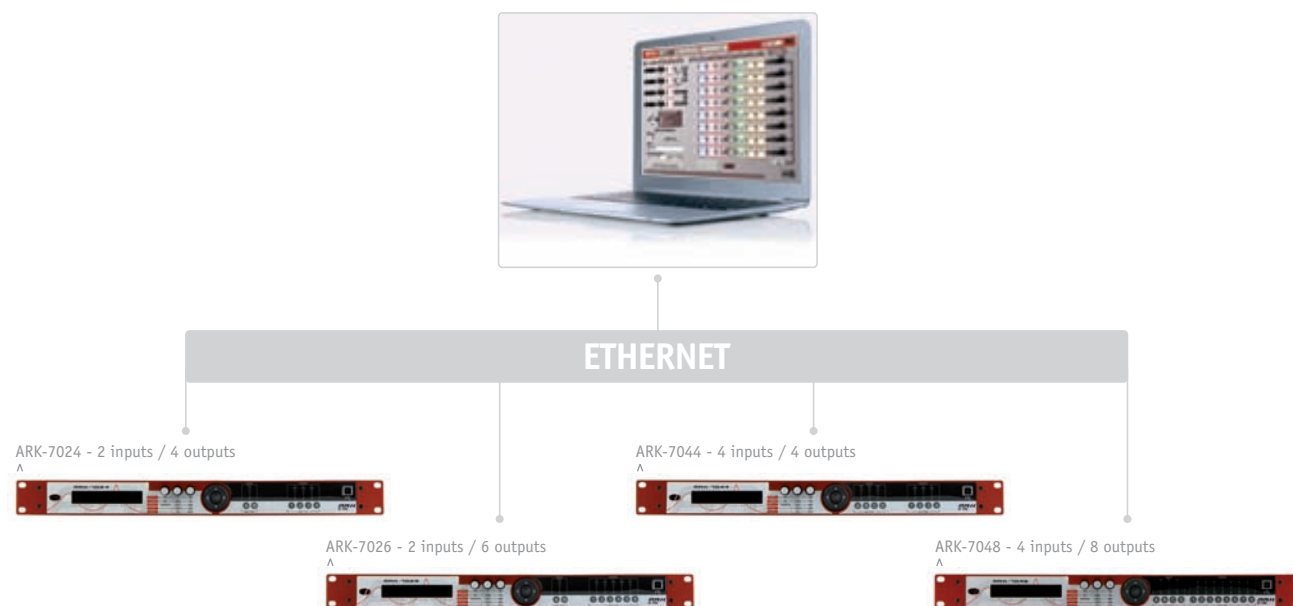
Connection for PC. The ARK software enables configuration of the processor in real time or in Offline mode.

### SIGNAL GENERATOR

The ARK has a signal generator available which is very useful for testing sound installations. It has 20Hz and 22KHz sine waves available, white noise and pink noise.

### ETHERNET

The ARK processors have ETHERNET connection available via a RJ45 professional connector. You can connect all models and processors online and assign each one an IP and identity name. This way any computer on the network will detect them and will be able to control and modify via remote every parameter of every processor. This opens many possibilities such as portable control via wireless, control from long distances or configuration in installations with difficult access zones.



### Input / Output Options

The following options are available for all ARK-70 models:  
Analogue Inputs and outputs (As standard). Code. ARK-7024  
Digital Inputs and AES/EBU outputs (optional) Code. ARK-7024DD  
Digital AES/EBU inputs and analogue outputs (optional) Code ARK-7024DA  
Ethersound Inputs and outputs (optional) Code. ARK-7024ET

The ARK-7048 has one further option available:  
1-2 analogue inputs, 3-4 AES/EBU digital inputs and analogue outputs Code. ARK-7048MD

<b>Input</b>	2 / 4
Impedance:	20 K Ohm Balanced (10 K Ohm unbalanced).
Connector:	Balanced XLR (pin 2 +).
AD converter:	24 bit-192KHz, 512x Oversampling.
Dynamic Range:	120 dB.
Max. level:	+19 dBu (balanced).
Digital AES/EBU:	Optional.
<b>Outputs</b>	4 / 6 / 8
Impedance:	50 Ohm Balanced (25 Ohm unbalanced).
Connector:	Balanced XLR (pin 2 +).
DA converter:	24 bit-192KHz, 512x Oversampling.
Dynamic Range:	120 dB.
Max. level:	+18 dBu (balanced).
Digital AES/EBU:	Optional.
<b>Ethersound</b>	Optional.
<b>Audio</b>	
Frequency Range	10 Hz – 24 KHz.
THD (%)	<0,0018%.
DSP Process	Internal resolution with 56 bit double precision in floating point.
Converters	24 bit resolution.
Propagation Delay:	0.6 milliseconds.
<b>Equalisation</b>	
Input GEQ / PEQ	29 GEQ Bands or 29 parametric filters per input.
PEQ output	9 per way. PEQ Type filters Parametric, Shelving High, Shelving Low, Low-Pass, High-Pass, Low-Pass Q variable, High-Pass Q variable, BandPass, Reject Band, AllPass order 1, AllPass order 2. Possibility to Link filters between Input and Outputs.
<b>Crossover</b>	Linkwitz Riley with 12, 24, 48 dB/oct. Butterworth and Bessel with 6, 12, 18, 24, 30, 36, 42 and 48 dB/oct.
<b>Delay</b>	
Input	212 / 54 milisec.
Output	20.8 milisec for Speaker alignment. Possibility to Link Delays.
<b>RMS Limiter-Compressor</b>	
1 per output.	
Threshold:	+18dBu to -50dBu.
Compression Ratio:	1:1 to 1:10 (1:infinite with limiter).
Power indication	Shows the maximum power applied to the speaker for the selected threshold.
<b>Peak Limiter</b>	
1 per output.	
Threshold:	+18dBu to -50dBu.
Peak Indication:	Shows the maximum peak Voltage applied to the speaker for the selected threshold.

ETHERNET RJ45 professional connector for safe connection, with activity LEDs

<b>Noise Gate</b>	1 per Output. Noise Threshold: -79dBu to -37dBu.
<b>Level Control</b>	Gain +6dBu to -40 dBu per input / output. Mute per input / output. Phase inversion per input / output. Possibility to Link Controls.
<b>Signal Generator</b>	Level 0dBu to -40dBu. Type: sine tone from 10Hz to 22KHz, Pink noise, White noise.
<b>Security Options</b>	global. Level 0: No restrictions. Level 1: Only allows preset changes. Level 2: Only allows mute modification. Level 3: Only allows preset changes and mute modification. Level 4: Blocks all the front panel controls. Restricted Zones: For each Preset it is possible to disable the access to any processor function (EQ, crossover, Limiter, etc) writing a preset password.
<b>Other functions</b>	Atmospheric compensation by Air absorption. Process Integration with RAINBOW – The acoustical prediction software Speaker data import from main audio measurement systems. Export & Import EQ files. Etc.
<b>Front Panel</b>	Display: LCD with 24 x 2 characters. Encoders: 3. Buttons: Navigator with 5 backlight buttons. 12 buttons for Edition and Mute with light indications. Level Meter: 7 leds per input/output, -40db, -6db, 0db, +6db, +12db, Limit, Over Limit.
<b>Communication</b>	USB. Ethernet.
<b>General</b>	
Power supply	85-240 V ~ 40-400 Hz. IEC connector. (Switching power supply, wide range).
Consumption	30 W.
Operating temperature:	-5° to 60° C (23° to 140° F).
Storage temperature:	-60° to 75° C (-76° to 167° F).
Humidity:	Max. 90% non-condensing.
Dimensions	482 x 45 x 226 mm.
Weight	3 Kg
Warranty	3 years





### ENCODER WITH PUSH BUTTON

This encoder enable the user to navigate between the different configuration options and adjust each parameter.

### LEVEL METERS

There are 2 indicator Leds per input/output.

In the inputs the green Led indicates that there is signal and the red Led indicates if the input is in CLIP.

For the outputs, the green Led indicates that there is signal and the red Led indicates that it is starting to limit/compress.

### USB

Connection for PC. The ARK software enables configuration of the processor in real time or in Offline mode.

### SIGNAL GENERATOR

The ARK has a signal generator available which is very useful for testing sound installations. It has 20Hz and 22KHz sine waves available, white noise and pink noise.

### ETHERNET (optional)

The ARK-20 processors have ETHERNET connection available via a RJ45 professional connector. This is an option. You can connect all models and processors online and assign each one an IP and identity name. This way any computer on the network will detect them and will be able to control and modify via remote every parameter of every processor. This opens many possibilities such as portable control via wireless, control from long distances or configuration in installations with difficult access zones.



ETHERNET

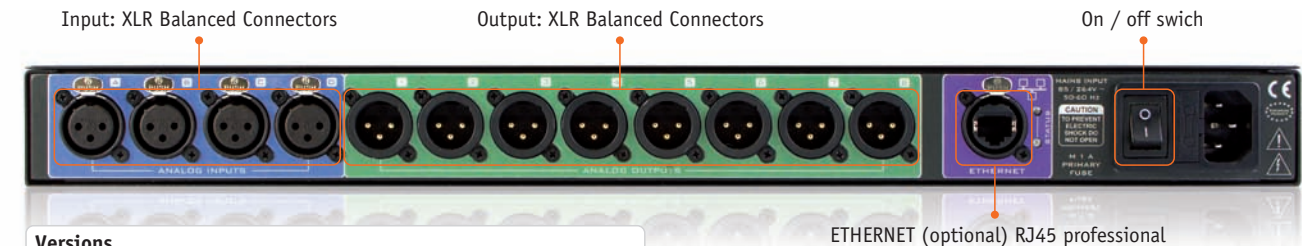
ARK-2024 - 2 inputs / 4 outputs



ARK-2026 - 2 inputs / 6 outputs



ARK-2048 - 4 inputs / 8 outputs



Versions  
ARK-2048 / ARK-2026 / ARK-2024

ETHERNET (optional) RJ45 professional connector for safe connection, with activity LEDs

<b>Input</b>	2 / 4
Impedance:	20 K Ohm Balanced (10 K Ohm unbalanced).
Connector:	Balanced XLR (pin 2 +).
AD converter:	24 bit-192KHz, 512x Oversampling.
Dynamic Range:	120 dB.
Max. level:	+19 dBu (balanced).
<b>Outputs</b>	4 / 6 / 8 (ARK-7024 / 7044 / 7026 / 7048).
Impedance:	50 Ohm Balanced (25 Ohm unbalanced).
Connector:	Balanced XLR (pin 2 +).
DA converter:	24 bit-192KHz, 512x Oversampling.
Dynamic Range:	120 dB.
Max. level:	+18 dBu (balanced).
<b>Audio</b>	
Frequency Range	10 Hz - 24 KHz.
THD (%)	<0,0018%.
DSP Process	Internal resolution with 56 bits double precision in floating point.
Converters	24 bit resolution.
Propagation Delay:	0.6 milliseconds.
<b>Equalisation</b>	
Input GEQ	29 GEQ Bands 1/3 oct.
PEQ output	9 per way.
PEQ Type filters	Parametric, Shelving High, Shelving Low, Low-Pass, High-Pass, Low-Pass Q variable, High-Pass Q variable, BandPass, Reject Band, AllPass order 1, AllPass order 2.
	Possibility to Link filters between Input and Outputs.
<b>Crossover</b>	Linkwitz Riley with 12, 24, 48 dB/oct. Butterworth and Bessel with 6, 12,18, 24, 30, 36, 42 and 48 dB/oct.
<b>Delay</b>	
Input	54.15 milisec
Output	20.8 milisec for Speaker alignment Possibility to Link Delays.
<b>RMS Limiter-Compressor</b>	1 per output.
Threshold:	+18dBu to -50dBu
Compression Ratio:	1:1 to 1:10 ( 1:infinite with limiter)
Power indication	Shows the maximum power applied to the speaker for the selected threshold.
<b>Noise Gate</b>	1 per Output.
Noise Threshold:	-79dBu to -37dBu.

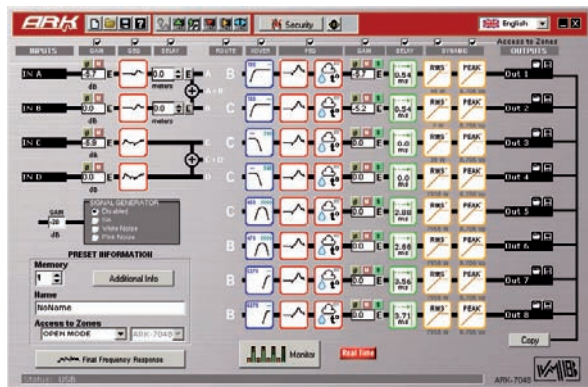
<b>Level Control</b>	
Gain	+6dBu to -40 dBu per input / output.
Mute	per input / output.
Phase inversion	per input / output.
	Possibility to Link Controls.
<b>Signal Generator</b>	
Level	0dBu to -40dBu.
Type:	sine tone from 10Hz to 22KHz, Pink noise, White noise.
<b>Security Options</b>	
Password	global
Level 0:	No restrictions.
Level 1:	Only allows preset changes.
Level 2:	Only allows mute modification.
Level 3:	Only allows preset changes and mute modification.
Level 4:	Blocks all the front panel controls.
Restricted Zones:	For each Preset it's possible to disabled the access to any processor functions (EQ, crossover, Limiter, etc) writing a preset password.
<b>Other functions</b>	Process Integration with RAINBOW - The acoustical prediction software. Speaker data import from main audio measurement systems. Export & Import EQ files. Etc.
<b>Front Panel</b>	
Display:	LCD with 24 x 2 characters.
Encoders:	1 with push button.
Level Meter:	Signal and clip leds per input. Signal and Limiting leds per output.
<b>Communication</b>	USB. ETHERNET (Optional).
<b>General</b>	
Power supply	85-240 V ~ 40-400 Hz. IEC connector. (Switching power supply, wide range)
Consumption	25 W
Operating temperature:	-5° a 60° C (23° to 140° F)
Storage temperature:	-60° a 75° C (-76° to 167° F)
Humidity:	Max. 90% non-condensing
Dimensions	482 x 45 x 226 mm
Weight	3 Kg
Warranty	3 years



### MAIN SCREEN

From the main screen you can clearly see the complete process schematics.

From just one point you can view the crossover curves, equalization, input route, gain level, mutes, solos and phase inversions. Intuitively and quickly you can see how the preset responds without having to enter in to numerous screens.

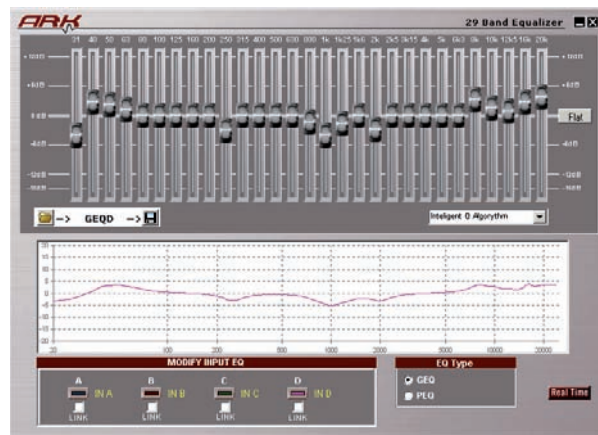


### GAIN



From the main screen or the gain window you can adjust the levels of each output and input as well as mute activation, solo or phase inversion. You can also link the gains desired to move simultaneously, either relatively or identically.

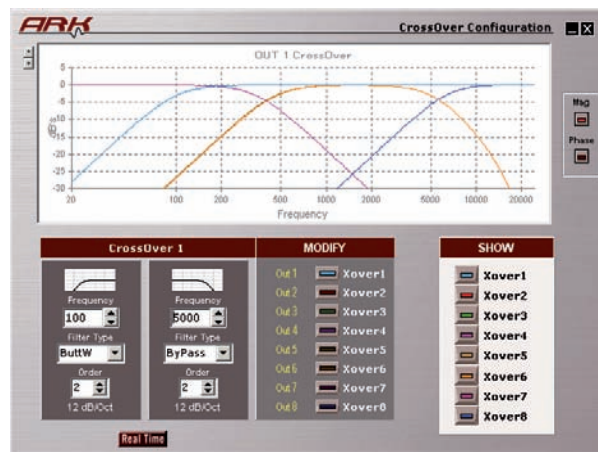
### GEQ/PEQ IN



Each input has a 29 filter graphic equalizer with 'Classic Q' and 'Intelligent Q' options which based on a unique ARK algorithm achieves a smoother and acoustically optimized curve. The ARK-70 models are also able to choose between 29 band Graphic EQ or use the 29 filters in Parametric mode, with all the flexibility this offers. It can also import or export individual GEQ / PEQ curves.

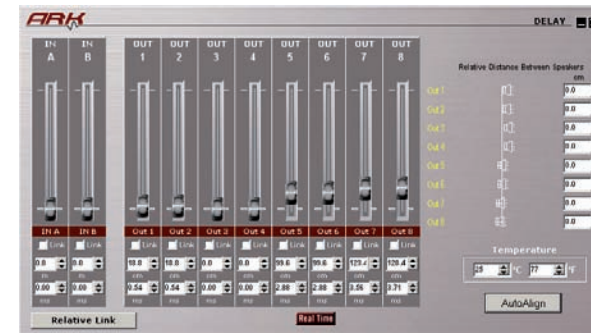


### CROSSOVER



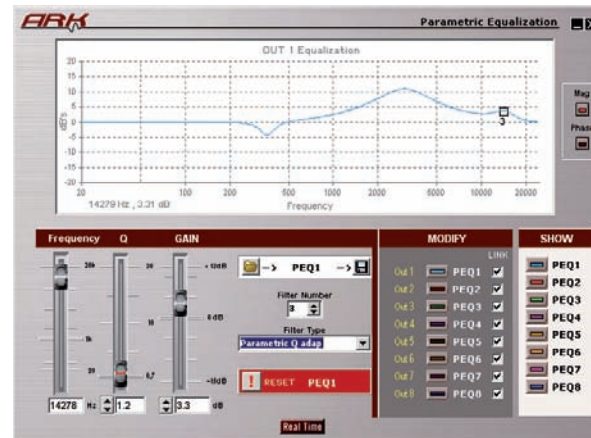
In order to configure the crossover filters, Butterworth, Bessel filters are available with 6, 12, 24, 30, 36, 42 & 48 dB/oct and Linkwitz Riley with 12, 24, 36 & 48 dB/oct in both sections, Low-pass and high-pass type.

### DELAY



There are two delay lines for inputs and an alignment line for each output designed to correct the positioning differences of the speakers and align cabinets.

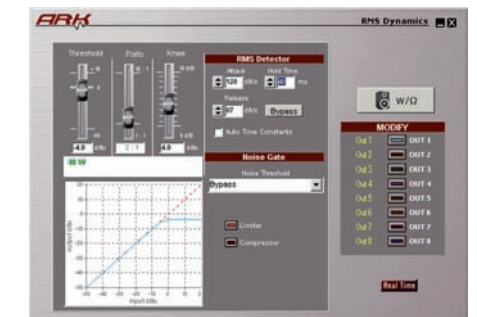
### PEQ OUT



Each output has 9 parametric equalization filters available. These are second order and you can choose between parametric filters, high and low shelving, high-pass and low-pass filters (with or without Q control), band-pass, reject band and also all-pass. All the filters are easily configurable from the processor or with the software. It also includes an option to link the PEQ from the selected outputs and import or export equalization curves independently, useful for using with other configurations.

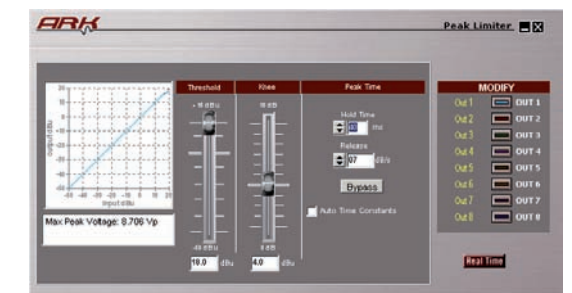
### DOUBLE DYNAMICS – RMS & PEAK

#### RMS LIMITER



In every output a sophisticated RMS compressor/limiter is available. They are type C.R.I. (Continuous Ratio Increment) resulting in extremely low distortion. An RMS detector algorithm is used to obtain a very high compression. The audio system is able to gradually reach its maximum power level and the sound will be perfectly clear and clean at all times avoiding typical problems caused by standard limiters whilst maintaining the intended original sound. To adjust the limiter the user can input the amplification gain as well as the power handling and speaker impedance connected to the output. A viewfinder will display the power that is being applied to the selected speaker. A NOISE GATE is also available which will respond with the same timing fixed as the main dynamic and from which the user can select different noise thresholds to delete.

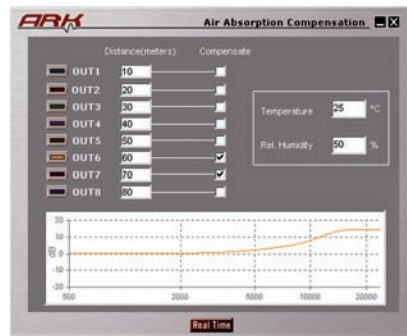
#### PEAK LIMITER



Only available in the ARK-70 models

In every output a Peak Limiter is also available which controls the movement of the speaker with a peak tension indicator which reaches the speaker, protecting it from any damage and also reducing distortion caused by over-excitation.

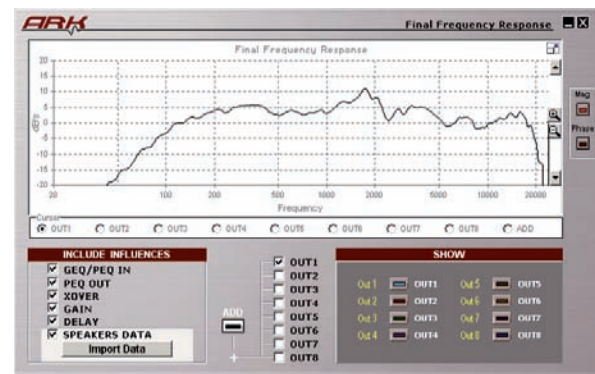
**ATMOSPHERIC COMPENSATION**



Only available for ARK-70 models.

Important function for outdoor events to compensate for air absorption loss caused over distance. By indicating the temperature, relative humidity and distance to compensate the software will automatically calculate the curve loss with the frequency and will reverse the effect so as to compensate – Very effective and impressive tool.

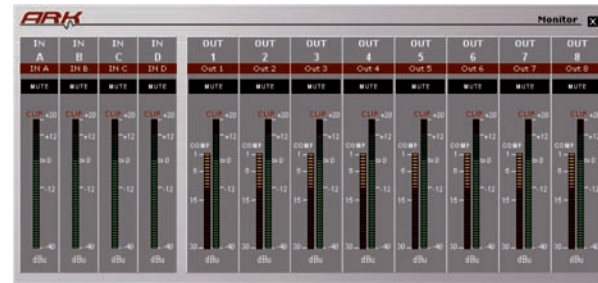
**IMPORTACIÓN DE DATOS**



The ARK is able to import real speaker measurements in magnitude and phase according to frequency. Data import is possible from main systems such as: CLIO, , Smaart Live, Audio Precision, Linear X LMS, SAT Live, Spectralab, DAAS 32, MLSSA, Acoustilyzer, CALSOD, WINAIR. In the Final Response window the effects of the filters applied to the speaker curve can also be viewed and all the parameters can be adjusted until the desired curve is obtained.



**MONITOR**



Window from where input and output level is monitored in real time. This features helps check whether the system is limiting/compressing and at what dB. It also shows if the inputs or outputs are clipping.

**SECURITY OPTIONS**



ARK processors offer many security features: From complete system password blocking to limited restriction levels

- Level 0: No restrictions.
- Level 1: Only allows preset changes.
- Level 2: Only allows mute modification.
- Level 3: Only allows preset changes and mute modification.
- Level 4: Bloks all the front panel controls.

In each preset the access to any function (EQ, crossover etc) can also be disabled by applying a preset password.

	ARK-70	ARK-20
PEQ IN Filters (per way)	29 GEQ or 29 PEQ	29 GEQ
PEQ OUT Filters (per way)	9	9
CrossOver	Up to 48dB/oct	Up to 48dB/oct
Input Delay (meters)	70	20
Output Delay (meters)	7	7
RMS Limiter / Compressor (per output)	✓	✓
Peak Limiter (per output)	✓	—
Atmospheric compensation	✓	—
Monitor	✓	✓
Noise Gate	✓	✓
GaIN	✓	✓
Mute	✓	✓
Phase Inversion	✓	✓
Solo	✓	✓
Signal Generator	✓	✓
Ethernet	✓	optional
USB	✓	✓
Speaker Data Import	✓	✓
Security Options	Global Password, 4 Security Levels, Restricted zones per Preset	Global Password, 4 Security Levels, Restricted zones per Preset
Complete Real Time Control	Hardware & Software	Hardware & Software
Export & Import EQ Files	✓	✓
Language	Spanish English	Spanish English
Digital AES/EBU	optional	—
ETHERSOUND	optional	—
Dynamic Range AD:	120 dB	120 dB
Dynamic Range DA:	120 dB	120 dB
Latency	0.6 ms	0.5 ms
THD+N	0.000018	0.000018
DSP Internal process	56 bit	56 bit
Display LCD	24x2	24x2
Encoders	3	1 with Push Button
Navigation Buttons	5	—
Mute/Edit Buttons	✓	—
Level Meters (per way)	7 Leds	2 Leds