DP-K1

Digital Audio Processor

Innovative Automatic Resonance Control creates optimal sound fields based on the venue's acoustic response

TOA's DP-K1 automatically curbs reson intelligibility and sound quality in acou

TOA again leads the way in ensuring optimal commercial sound audio, with an easy-to-operate digital audio processor outfitted with an 8-input/ 8-output capability, an ARC that incorporates the latest technology, and such features as gain, equalizer, crossover, compressor, noise gate, matrix and delay. The DP-K1 is equipped with TOA's new Automatic Resonance Control (ARC) function, which automatically measures and

processes the acoustic resonance characteristics of complex environments and provides compensatory parameter settings.

This latest addition to the TOA line of commercial sound digital audio processors makes it easy to bring optimal sound enhancement even to such as houses of worship, sports facilities, convention center, airports and many other venues.

DP-K1

## Operational versatility for wide-ranging applications.

Working in tandem with the unit's 8-bus matrix capability, the DP-K1's modular design allows up to 8 line/mic inputs and 8 line outputs, as well as flexible contact/closure remote control. The ARC function, along with gain, equalizer, crossover, noise gate, matrix and delay functions, can be applied to each of the 8 inputs and outputs. To ensure extra-precise versatility, six separate modules are available for both input and output, plus one for remote control operation.
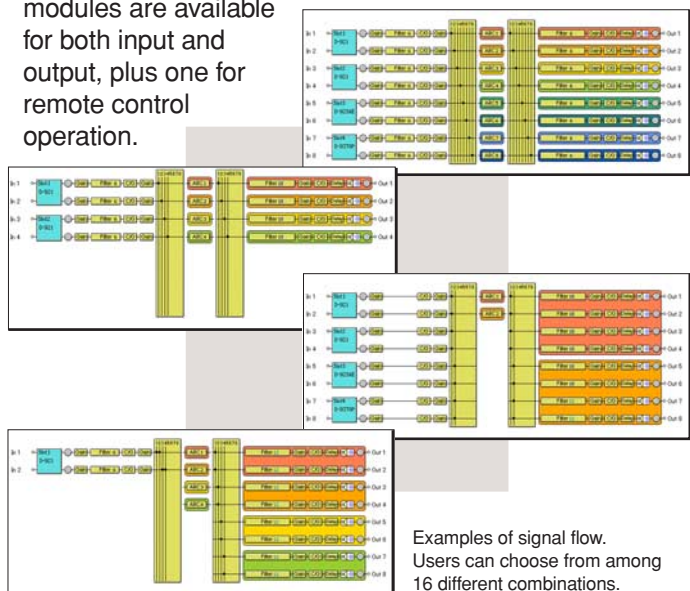
Examples of signal flow. Users can choose from among 16 different combinations.

Automatic parameter adjustments ensure clear sound, simply and easily.

After obtaining measurements of the acoustic characteristics of the venue, the Automatic Resonance Control function automatically measures frequency characteristics of the broadcast area and finds resonant frequencies. It then creates an equalizer that curbs resonances, to improve speech intelligibility and sound quality. Up to now, acoustic compensation has been manually carried out and time-consuming, but TOA's proprietary ARC technology allows the task to be accomplished with easy operation and in a short time.

Conceptual Image
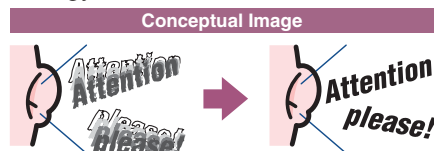
Quick and easy setting of parameters via a PC.

Settings for signal flow, matrix, digital signal processing and ARC operation can be performed easily on a PC via Ethernet. Up to eight parameter-setting patterns set for different purposes can be stored in memory.

Rack mounting available in three sizes.

...ances and improves speech ...stically challenging venues.

(1) Place the microphone in the broadcast area whose resonance characteristics you want to measure.

Room 8
Room 7
Room 6
Room 5
Room 4
Room 3
Room 2
Room 1

DP-K1

Mixer
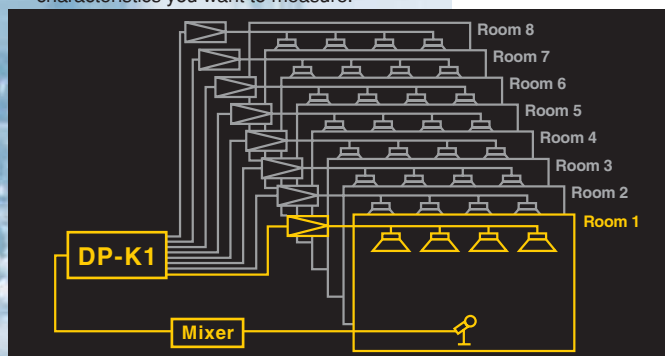
* Measurements can be carried out with a microphone you routinely use.
  It is not necessary to employ a microphone specially dedicated to performing measurements.
  (It is not necessary to leave the microphone within the measuring area after the measurement is complete.)
* One DP-K1 unit is capable of making acoustic adjustments for up to 8 broadcast areas.

(2) Press the measurement button on the PC screen.

(3) The acoustic characteristics of the broadcast area are automatically measured.
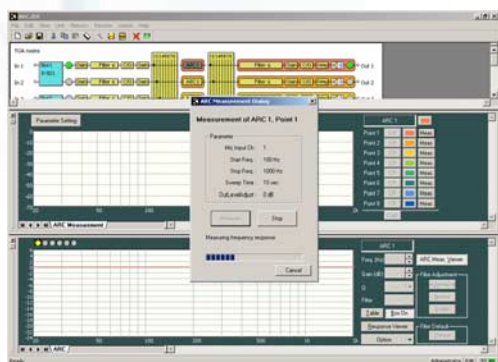
(4) The ARC finds the acoustic resonant frequencies in the broadcast area and automatically creates an ARC filter that ensures vocal and sound clarity.

In addition, by moving the microphone and repeating the above steps at several different locations, finer acoustic compensations are possible. For each broadcast area, measurements can be made at up to 8 measurement points.
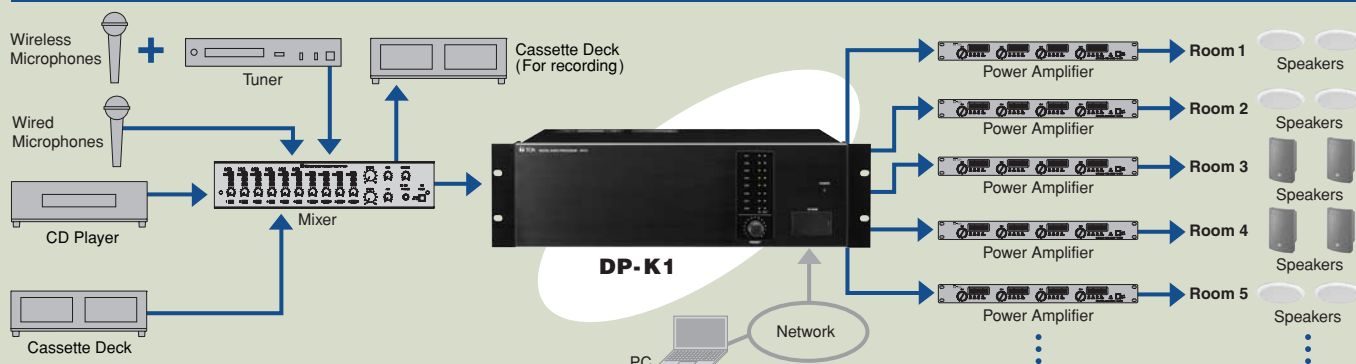
Modules

Modular design allows you to configure the most cost-effective design for each application.
TOA offers a range of modules to suit a variety of input and output requirements.

DP-K1 Rear

System Example

Wireless Microphones

Tuner

Cassette Deck (For recording)

Wired Microphones

CD Player

Mixer

Cassette Deck

DP-K1

PC

Network

Power Amplifier — **Room 1** — Speakers
Power Amplifier — **Room 2** — Speakers
Power Amplifier — **Room 3** — Speakers
Power Amplifier — **Room 4** — Speakers
Power Amplifier — **Room 5** — Speakers

SPECIFICATIONS

Power Source	AC mains, 50/60Hz
Power Consumption	40W
Frequency Response	20 – 20,000Hz, ±1dB (+4dB* Input)
Input	Max. 8 channels, modular construction (modules optional)
Output	Max. 8 channels, modular construction (modules optional)
IO Configuration*²	2-IN/4-OUT, 2-IN/8-OUT, 4-IN/4-OUT, 4-IN/8-OUT, 6-IN/4-OUT, 6-IN/8-OUT, 8-IN/8-OUT
Signal Processing	
Automatic Resonance Control Function	Parametric equalizer: 20 – 20,000Hz, ±12dB, Q: 0.267 – 69.249
Level Control	−∞ to +12dB (0.5dB steps), with polarity selector
Equalizer/Filter	Parametric equalizer: 20 – 20,000Hz, ±12dB, Q: 0.267 – 69.249

	Filtering: High-pass filter: 20 – 20,000Hz, 6dB/oct, 12dB/oct
	             Low-pass filter: 20 – 20,000Hz, 6dB/oct, 12dB/oct
	             Notch filter: 20 – 20,000Hz, Q: 8.651 – 69.249
	             All-pass filter: 20 – 20,000Hz, Q : 0.267 — 69.249
	             High shelving filter: 6 – 20kHz, ±12dB
	             Low shelving filter: 20 – 500Hz , ±12dB
	             Horn equalizer: 20kHz, 0 to +18dB,(0.5dB steps)
	Crossover filter: 20 – 20,000Hz, 6dB/oct, 12dB/oct, 18dB/oct, 24dB/oct

Compressor	Threshold: −16 to +24dB* (1dB steps) Ratio: 1 : 1, 2 : 1, 3 :1, 4 : 1, 8 : 1, 12 : 1, 20 : 1, ∞ : 1 Attack time: 0.02 – 100ms Release time: 10ms – 5s
Noise gate	Threshold: −∞ to −26dB* (1dB steps) Attack time: 0.1 – 100ms Release time: 20ms – 5s
Delay	Delay time: 0 – 682.0ms (0.021ms steps)
Matrix	8 × 8 Level control: −∞ to 0dB (1dB steps), with polarity selector
Preset memory	8
Auxiliary Function	Key lock function
Setting Software	OS: Windows*³ 2000/XP Control system: 10 BASE-T/100 BASE-TX, Auto-nagotiation, RJ45 connector
Front Panel Section	Preset memory recall knob: 1 Input indicator: Green LED Output indicator: Green LED
Module Slot (Rear Panel)	Input module slot: 4 Output module slot: 2 Remote control module slot: 1
Operating Temperature	+5°C to +40°C
Finish	Panel: Aluminum, hair-line finish, black Others: Pre-coated steel plate, black, 30% gloss
Dimensions	482.6 (W) × 132.6 (H) × 320 (D)mm (excluding projection)
Weight	7.4kg
Accessory	Power cord (2m) × 1, Rack mounting bracket (preinstalled on the unit) × 2, Rack mounting screw × 4, Blank panel (preinstalled on the unit) × 8, Module mounting screw (spare) × 4, CD (software) × 1
Option INPUT MODULES	D-921E; 2 inputs, mic/line changeable, Removable terminal block connectors, 24 bit A/D converters D-921F; 2 inputs, mic/line changeable, XLR-F connectors, 24 bit A/D converters D-922E; 2 inputs, mic/line changeable, Removable terminal block connectors, 20 bit A/D converters D-922F; 2 inputs, mic/line changeable, XLR-F connectors, 20 bit A/D converters D-936R; 4 stereo inputs, unbalanced line level, RCA pin jack connectors, 24 bit A/D converters D-923AE; 2 digital inputs, AES/EBU format, XLR-F connectors D-937SP; 2 digital inputs, S/PDIF format, optical and coaxial (RCA pin jack) connectors
OUTPUT MODULES	D-971E; 4 outputs, balanced line level, Removable terminal block connectors, 24 bit A/D converters D-971M; 4 outputs, balanced line level, XLR-M connectors, 24 bit A/D converters D-971R; 4 outputs, stereo or mono sum line level, RCA pin jack connectors, 24 bit A/D converters D-972AE; 4 digital outputs, AES/EBU format, XLR-M connectors D-961SP; 4 digital outputs, S/PDIF format, optical and coaxial (RCA pin jack) connectors

REMOTE CONTROL MODULES	D-981; 8 inputs for activation of memory, volume up/down, channel on/off and stereo input selection
	      8 outputs of memory, channel on/off, contact input status and stereo input selection
	      Removable terminal block connectors
	D-983; 24 inputs for activation of memory, volume up/down, channel on/off and stereo input selection
	      16 outputs of memory, channel on/off, contact input status and stereo input selection
	      RJ45 connectors

* 0 dB =0.775 V
*² It is not possible to use 8-IN/4-OUT setting.
*³ Windows is a trademark of Microsoft Corporation.
Note: When installing the unit, never block the intake vents provided in the unit's bottom near the rear.