IBANEZ SIGNAL PROCESSORS

Ibanez has long been a leader in the field of signal processors — and for good reason. An unprecedented international team of engineers, designers and artists have combined their talents to create signal processors that are artistically stimulating and electronically reliable. No compromises have been made in the quest for the most innovative and desirable signal processors available anywhere.

With the introduction of the Ibanez effects devices a new standard was set for others to follow. Quality and versatility were combined with human engineering to make effects devices easier to use and more effective than ever before. Signal processing had indeed come out of the dark ages.

Ibanez revolutionized the signal processing industry with the first integrated signal processing systems: the UE400 Rock System Series and the innovative UE300 Floor System Series. The benefits of the system optimized design created a new level of performing versatility, reliability and convenience — a level that is still unmatched in the industry today.

Ibanez brings its innovative tradition to pro sound with the introduction of two exciting new digital audio processors. The DM1000 Digital Delay and the HD1000 Harmonics Delay break the price/performance barrier to deliver pre-studio quality signal processing to the musician, professional soundman and recording engineer.

We at Ibanez invite you to look through our catalog and see just what has made Ibanez a leader in quality and innovation.

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EFFECTS DEVICES FEATURES

LED INDICATOR
An easily visible LED indicates the IN/OUT status of the device and its battery condition. Vital statistics may be visually checked during setup, avoiding embarrassing performance disasters.

CASE DESIGN
The case has a slanted front, human engineered for comfortable activation of the switch while standing or sitting. The control knobs are recessed for protection. A rubber pad on the case bottom prevents device movement during use. The case is made of durable aluminum for years of dependable service. Convenient small size (124mm X 74mm X 53mm) and lightweight (670g, 1.5 lbs).

CIRCUIT DESIGN
Ibanez Effects Device circuits are state-of-the-art designs providing stable, repeatable performance with low noise. Only top grade components and circuit board materials are used. All finished assemblies are fully tested to rigorous quality assurance specifications.

SPECIFICATIONS
- **PT9 Phaser**
  - Specifications:
    - **Input Impedance**: 500K ohms
    - **Output Impedance**: <1K ohms
    - **Gain**: 20 dB (unity)
    - **Sweep Speed Range**: 0.28 Hz - 1.3 Hz
    - **Equivalent Input Noise**: <0.000135 mV (HF-A)

- **FL9 Flanger**
  - Specifications:
    - **Input Impedance**: 500K ohms
    - **Output Impedance**: <1K ohms
    - **Gain**: 20 dB (unity)
    - **Delay Time Range**: 0.06 - 12.5 Hz
    - **Sweep Speed Range**: 0.2 - 3.55 Hz
    - **Equivalent Input Noise**: <0.000135 mV (HF-A)

- **CS9 Stereo Chorus**
  - Specifications:
    - **Input Impedance**: 500K ohms
    - **Output Impedance**: <1K ohms
    - **Gain**: 20 dB (unity)
    - **Delay Time Range**: 0.06 - 12.5 Hz
    - **Sweep Speed Range**: 0.2 - 3.55 Hz
    - **Equivalent Input Noise**: <0.000135 mV (HF-A)

- **TS9 Tube Screamer**
  - Specifications:
    - **Input Impedance**: 500K ohms
    - **Output Impedance**: <1K ohms
    - **Maximum Input Level**: 6 dBm
    - **Maximum Gain**: 43 dBm
    - **Maximum Output Level**: 22 dBm
    - **Equivalent Input Noise**: <100 dBm (HF-A)

BATTERY COMPARTMENT
The battery may be easily accessed without the use of tools or coins. The compartment protects the battery from mechanical shock and circuit board from battery leakage.

AC/DC POWER CAPABILITY
Ibanez effects devices operate on 9 volts DC, typically from an internal battery. They may also be safely powered by an external AC adapter via the rear mounted power jack.

SILENT Q-1 SWITCHING
The Q-1 switching system uses field effect transistors for absolutely silent reliable operation. The smooth action switches are ergonomically arranged for easy operation.

TUBE SCREAMER
The warm and powerful sound of an overdriven tube amplifier is long eluded effects device manufacturers. The TS9 Tube Screamer has captured this distinctive sound in a remarkably functional format. The Overdrive control and Overload Level control adjust the intensity of overdrive and output volume. The Tone control adjusts the brightness for warm and smooth or sizzling hot distortion. From the most subtle of rumble to the most outrageous of rears, the TS9 Tube Screamer provides the artist with the widest range of usable, distinctively tube sounds.
SD9
SONIC DISTORTION

The Distortion sound has been around for some time now and it's as popular today as ever. The SD9 Sonic Distortion expands on the traditional idea of distortion to create a wide new range of possibilities. The Tone control allows the artist to modify the distortion with bass or treble boost for exciting new colorations. The Distortion control and Output Level control adjust the intensity and level of distortion. Versatility and performance — The SD9 Sonic Distortion is a cut above.

SPECIFICATIONS
Input Impedance .......... 500K ohms
Output Impedance ......... <1K ohms
Maximum Output Level .... 0 dBm
Gain .................. +95 dB
Equivalent Input Noise ....... -100 dBm (HI-FI-A)

CP9
COMPRESSOR/LIMITER

Compressor/Limiters are very useful devices for increasing volume sustain and for containing signal peaks. But until now, the attack time of the Compressor/Limiter was fixed — either you liked the way it sounded or you didn't. The CP9 Compressor/Limiter lets the artist choose his attack time, fast for smooth, tight control of signal attack or slow for a more persuasive attack (great for bass!). The CP9 also uses a new VCA configuration for low noise operation even at the highest sustain. The CP9 Compressor/Limiter — an unusual value for guitar, keyboard or bass.

SPECIFICATIONS
Input Impedance .......... 500K ohms
Output Impedance ......... <1K ohms
Maximum Input Level ... +18 dBm
Maximum Output Level ... +10 dBm
Compression Range ........ 40 dB
Attack Time Range ....... 6 – 20 ms
Equivalent Input Noise ....... -85 dBm (HI-FI-A)

AD9
ANALOG DELAY

Discrete echoes are one of the most dramatic effects in the music industry. Bulky tape and "sleeping-disk" units have given way to the convenience and reliability of solid state delays. The AD9 Analog Delay uses a compander with pre- and de-emphasis for an exceptionally clean delay. The Delay Time control adjusts the delay time and the Delay Level control allows the artist to adjust the mix between dry and delayed signals. The Repeat control permits the number of repeats to be controlled without runaway. Two outputs enable the dry and delayed signals to be separately routed for dramatic special movement. The quality and features of the AD9 Analog Delay make it the professional's choice.

SPECIFICATIONS
Input Impedance .......... 500K ohms
Output Impedance ......... <1K ohms
Maximum Input Level ... +18 dBm
Maximum Output Level ... +10 dBm
Compression Range ........ 40 dB
Attack Time Range ....... 6 – 20 ms
Equivalent Input Noise ....... -85 dBm (HI-FI-A)

GE9
GRAPHIC EQ

Equalizers are extremely useful frequency response modifiers. EQ's can change the sound of voices, instruments and signal processors such as distortion devices, phasers and time delay effects. They are also widely used in feedback control applications. The GE9 Graphic EQ combines the simplicity of a graphic booster with the quiet circuitry. The GE9 uses six octave-wide minimum-phaselift filters for 15 dB of boost or cut. The Level slider allows the signal level to be adjusted without disturbing the filter settings. The GE9 Graphic EQ adds a useful addition to any musician's system.

SPECIFICATIONS
Input Impedance .......... 500K ohms
Output Impedance ......... <1K ohms
Maximum Input Level ... +10 dBm
Maximum Output Level ... +5 dBm
Filter Center Frequencies ........ 100, 200, 400, 800, 1.6K, 3.2K Hz
Filter Bandwidth ........... 1 octave
Filter Control Range .......... ±15 dB center-determined
Equivalent Input Noise ....... -85 dBm (HI-FI-A)

PP9
PARAMETRIC EQ

Parametric Eqs are a powerful method of equalization. Its filter control may be adjusted over a wide frequency range allowing the artist to affect a specific frequency band of interest. This feature is most useful for getting that very special sound from voices, instruments or signal processors. The PP9 Parametric EQ contains a wide-ranging sliding filter along with fixed high and low shelving type filters. An infinite number of settings — from mild tonal changes to extreme frequency modifications — and easily obtainable. The PP9 Parametric EQ provides simplicity with maximum flexibility.

SPECIFICATIONS
Input Impedance .......... 500K ohms
Output Impedance ......... <1K ohms
Filter Types ............... Low Pass, High Pass
Filter Frequencies .......... 100 – 2 KHz (low range)
200 – 4K Hz (high range)
Equivalent Input Noise ....... -90 dBm (HI-FI-A)

AF9
AUTO FILTER

Auto filters are automatic "wash-and-dash" type sliding filters that are triggered by the input level. The AF9 Auto Filter has taken that idea several steps further. The AF9 provides three selectable filter types, two slide directions and two slide ranges. The Sensitivity control adjusts the auto threshold and the Peak control determines the slide width. The chosen filter's slide action may be placed anywhere. Whenever the emphasis is desired, making the AF9 ideally suited for any type of instrument. The AF9 Auto Filter truly represents the state-of-the-art.

SPECIFICATIONS
Input Impedance .......... 500K ohms
Output Impedance ......... <1K ohms
Filter Types ............... Mid Bandpass
Filter Frequencies .......... 100 – 2 KHz (low range)
200 – 4K Hz (high range)
Equivalent Input Noise ....... -90 dBm (HI-FI-A)
IBANEZ MULTI-EFFECTS SYSTEMS

As the relationship between the artist and electronics has matured the professional has seen a need for more sophisticated signal processing capabilities. He needs a system that is easily changed in live situations. It must be compact, easy to set up and yet flexible enough to accommodate his particular sound.

Ibanez was first to meet this challenge with the UE400 Rack System Series — professional quality rackmount processor systems. The response was tremendous. The UE400 Series have found their way into professional and semi-pro recording studios and PA systems as well as musical instrument systems.

Ibanez continues to lead the way with the UE300 Floor System Series — a bold new format for multi-effect systems. And again, the response has been overwhelming. Clearly the time for Ibanez Multi-Effect Systems has come.

UE300 FLOOR SYSTEM SERIES

Each system in the UE300 series contains three integrated signal processors and an external loop for use with external processors. Each effect or the whole system may be switched in and out using the Q-1 silent switching system. The UE300 Series are AC powered and include multiple outputs for dimensional enhancement of the sound. LED's indicate the status of each effect and master control. Professional quality and roadability make the UE300 Floor System Series a unique solution for the pedal weary musician. Uniquely Ibanez.

UE400 RACK SYSTEM SERIES

The UE400 Rack System Series are the most advanced multi-effects systems in the industry. Four signal processors and an external loop capability are integrated into the most flexible package available. The Ibanez Insta-Patch switching system permits the artist to place each effect in any desired location — no patch cords are necessary. Changes in the Insta-Patch program are quick and easy, giving the artist versatility never before realized.

Each UE400 System is AC powered and housed in a standard EIA 19 inch rackmount package. A remote footswitch provides foot control of all effects and system bypass. LED's on the rack unit and the remote footswitch indicate the status of each effect, the Insta-Patch system and master control. Multiple outputs are provided for enhanced dimensional effects.

The UE400 Rack System Series represents the leading edge of multi-effect systems technology — maximum flexibility, easy utilization, and the professional quality that is Ibanez.

PROFESSIONAL PATCH CABLES AND PLUGS

The combination of distortion and wah-wah effects produces a complex sound of unique character. The rich harmonics overtones produced by the distortion are filtered by the wah-wah for dynamic control of distortion color. The 84 Double Sound places a raging distortion stage in a rocker type wah-wah pedal of unparalleled comfort and control. Stickers control the distortion intensity and level. Footswitches control the bypass functions of both sounds. An LED indicates effect and battery status. The 84 Double Sound — a uniquely versatile and dynamic combination.

SPECIFICATIONS

Input Impedance: 1M ohms
Output Impedance: ≤100K ohms
Maximum Input Level: +4 dBm
Maximum Output Level: +10 dBm (0 dBm distortion)
Equivalent Input Noise: -100 dBm (HF-A)
Power Supply: 9V DC (Battery)
Weight: 1.5 Kg, 4.6 lbs

215 6 INCHES SHORT

The Ibanez 215 Patch Cable measures six inches short and features two right-angle male phone plugs. The configuration of the 215 permits the musician to place his effects side by side as close as desired. The 215 Patch Cable may be used with any make of effect. Quality components assure a long-lived connection.

217 18 INCHES SHORT

The Ibanez 217 Patch Cable measures 18 inches short and features two reinforced straight male phone plugs. The 217 is ideal for keeping rack connections neat and manageable. Professional grade components make the 217 Patch Cable perfect for road or studio use.

SPECIFICATIONS

Input Impedance: 1M ohms
Output Impedance: ≤100K ohms
Maximum Input Level: +4 dBm
Maximum Output Level: +10 dBm (0 dBm distortion)
Equivalent Input Noise: -100 dBm (HF-A)
Power Supply: 9V DC (Battery)
Weight: 1.5 Kg, 4.6 lbs

4564 DOUBLE MALE PATCH PLUG

The Ibanez double male Patch Plug is a unique solution to the problems of interconnecting effects devices without the tangle of cables underfoot. The 4564 provides two male phone plugs that are offset to accommodate virtually any effect device available regardless of jack height. Constructed of solid brass, the 4564 Patch Plug will never need repairing.
UE300 FLOOR SYSTEM

The UE300 Floor System utilizes a powerful trio of processors for guitars or bass. The exceptionally quiet Compressor/Limiter with variable attack time, the Tube Screamer for a myriad of tube amp sounds, and the Stereo Chorus, the latest in time delay sound whose stereo outputs dimensionally enhance all of the effects of the UE300. The combination of Compressor/Limiter and Tube Screamer is ideal for creating smooth, unadorned distortion. An external loop permits the artist to place additional processors between the Tube Screamer and Stereo Chorus. Q-1 silent switching is provided on all sections and on master control. The UE300 Floor System—today's most desired sounds in today's most advanced design.

SPECIFICATIONS
Compressor/Limiter Compression Ratio .............. 40:1
Tube Screamer Max. Gain .......................... 30 dB
Stereo Chorus Time Delay Range...................... 3.2 – 8.5 ms
Input Impedance ..................................... 500K ohms
Output Impedance ..................................... 1K ohms
Dimensions ........................................... 310(w) x 190(d) x 70(h) mm
Weight ................................................ 1.9 kg (4.2 lbs)
Power Requirements .............................. 117 VAC, 60 Hz, 3.7 W
220 – 240 VAC, 50 Hz, 5.2 W

UE303B FLOOR SYSTEM

The UE303B Floor System contains the three most popular processors for bass. The versatile Auto Filter for attack-driven automatic filtering, the Compressor/Limiter with variable attack time, and the Stereo Chorus/Flanger for an undulating bass sound. Stereo outputs enhance all of the effects of the UE303B when used with two amplifier systems. An external loop permits the artist to insert additional signal processors between the Compressor/Limiter and the Stereo Chorus/Flanger. The Q-1 switching system provides silent switching of all effects and master control. The UE303B—the most advanced processor system for bass, keyboards or guitar.

SPECIFICATIONS
Auto Filter Frequency Range ..................... 50 – 1 KHz (Low Range)
......................................................... 100 – 2 KHz (High Range)
Compressor/Limiter Compression Range .............. 40:1
Stereo Chorus/Flanger Delay Range .................. 1.0 – 12.8 ms
Input Impedance ..................................... 500 K ohms
Output Impedance ..................................... 1K ohms
Dimensions ........................................... 310(w) x 190(d) x 70(h) mm
Weight ................................................ 2.1 kg, 4.6 lbs
Power Requirements .............................. 120 VAC, 60 Hz, 6W
220 – 240 VAC, 50 Hz, 9W

UE305 FLOOR SYSTEM

The UE305 Floor System contains three popular signal processors for keyboards, guitars or bass. The Compressor/Limiter with variable attack time, the Analog Delay for quality echo and hand reverb effects, and the Stereo Chorus for a swirling multi-dimensional sound. The stereo output enhances all the effects of the UE305. A third output is provided for echo "ping-pong" effects or for system branching. An external loop between the Compressor/Limiter and Analog Delay allows the control of additional signal processors. The Q-1 switching system is used for silent switching of each section and master control. The UE305—another reason why Ibanez leads the way in signal processing.

SPECIFICATIONS
Compressor/Limiter Compression Ratio .............. 40:1
Analog Delay Range ..................... 500 – 300 ms
Stereo Chorus Delay Range ...................... 3.2 – 8.5 ms
Input Impedance ..................................... 500K ohms
Output Impedance ..................................... 1K ohms
Dimensions ........................................... 310(w) x 190(d) x 70(h) mm
Weight ................................................ 2.1 kg, 4.6 lbs
Power Requirements .............................. 120 VAC, 60 Hz, 6W
220 – 240 VAC, 50 Hz, 9W
The UE400 Rack System contains four professional signal processors, an external effects loop and the Insta-Patch switching system. The Compressor provides smooth, clear sustain, the Phaser uses eight phase shift stages for professional-quality phase sweeps, the Overdrive provides a wide range of distortion sounds and the Stereo Chorus/Flanger for the most popular of time delay effects. The external loop, allows integration of other signal processors into the systems control. The remote footswitch uses silent FET switching for each section of the system and master control — allowing the artist to change complex processor combinations at the touch of a switch. The UE400 Rack System with Insta-Patch — the most powerful signal processing system available.

**SPECIFICATIONS**

- **Compression Ratio**: 40 dB
- **Phaser Stages**: 8 stages
- **Overdrive Max Gain**: 40 dB
- **Stereo Chorus/Flanger Delay Range**: 1.46 - 12.8 ms (Flanger)

**Input Impedance**

- **Input/Effect Received**: 100K ohms
- **Distortion Impedance (Main Out, S, Chorus Out, Eff Send)**: 10K ohms

**Dimensions**

- **Footswitch**: 340(l) x 43(h) x 76(d)mm
- **Weight**: 2.6 kg, 5.8 lbs

**Power Requirement**: 117 VAC, 60 Hz, 7.0 W

220 - 240 VAC, 50 Hz, 9.2 W

The UE405 Rack System provides four popular and versatile signal processors along with an external loop capability and Baxandall's Insta-Patch switching system. The Compressor/Limiter is a low noise limiter with variable attack time. The Stereo Chorus provides a moving texture to the sound and stereo outputs for enhanced multi-dimensional effects. The Parametric Equalizer is the most versatile EQ in the industry. The Analogy Delay provides professional delay effects from long echo to hard reverber. The external loop facility permits the artist to insert additional signal processors at any point in the system. The remote footswitch with silent FET switching provides single-touch control of each section and the entire system. The UE405 Rack System with Insta-Patch — the professionals' choice for signal processing systems.

**SPECIFICATIONS**

- **Compressor/Limiter Compression Ratio**: 40 dB
- **Stereo Chorus Delay Range**: 3.2 - 8.6 ms
- **EQ Frequency Center Range**: 22 Hz - 12 kHz
- **Analog Delay Range**: 10 - 200 ms
- **Input Impedance**
  - **Input/Effect Received**: 100K ohms
  - **Distortion Impedance (Main Out, S, Chorus Out, Eff Send)**: 10K ohms
- **Dimensions**
  - **Footswitch**: 340(l) x 43(h) x 76(d)mm
  - **Weight**: 2.6 kg, 5.8 lbs
- **Power Requirement**: 117 VAC, 60 Hz, 7.0 W
  220 - 240 VAC, 50 Hz, 9.2 W
With the invasion of signal processors into music making, sound reinforcement and recording, professionals have demanded products of the highest quality. Reliability, versatility and sonic excellence are absolutely essential. Units that "go down" cost the professional money and perhaps future clients - he counts on his equipment working every time. The professional's signal processing budget is almost always limited, so he will look for processors that will do many things for him, not just one or two. The professional always looks for the best possible sound from his investment, so his demands on his signal processors are no less rigorous. He wants the best, most useful sounds that technology can provide at a price he can afford.

Other features that professionals look for in signal processors include standard 19" inch rack mount packaging and easy system interface and utilization. Many professionals in recording and sound reinforcement and professional musicians have adopted the EIA standard 19" inch rack system for their stationary and portable electronics systems. Amplifiers, mixers, equalizers and other professional sound equipment use the EIA standard, so professional signal processors must fit into that standard as well. Processor inputs and outputs must conform to professional standards - the use of adapters and matching transformers must be kept to an absolute minimum. Finally, the signal processor must be easy to use within the professional's system. If the processor is difficult to set up or adjust, the whole system will suffer.

The design and development team at Ibanez has long recognized the demanding standards of the professional. As a result, Ibanez has developed professional signal processors that not only meet the requirements of the professional, but create new price/performace standards for the industry at large. This is possible because Ibanez Professional Products ride the leading edge of technology. Advanced analog circuit design, benchmark of Ibanez processing technology, is now joined by exciting and innovative digital signal processing designs. Vast new frontiers are possible with this new, quickly emerging technology, and Ibanez will continue to lead the way.

But leading-edge technology will not help the professional if his other requirements are ignored. Ibanez Professional Products incorporate EIA packaging standards and industry-standard system interfacing. While being easy to use, Ibanez Professional Products are extremely versatile. And for audio quality, they defy comparison with anything in their class.

Reliability, versatility and sonic excellence are the absolute essentials of IBANEZ PROFESSIONAL PRODUCTS.

When delay or "echo" was first used in music making, tape, tape loops or recording discs were used to generate the time delay required. Complex mechanisms and frail recording materials made these early "echo boxes" a nightmare (at best) for the professional.

Recent advances in solid state technology have led to a new generation of delay devices. Gone are the tape and disc mechanisms and in their place is clean, maintenance free solid-state analog circuitry. A new plateau of performance and reliability was made available to the professional.

But another equally profound benefit was realized with the switch to solid state circuitry. The slight manifestation of delay time, now made possible with analog circuitry, opened the door to a vast range of new sounds. Flanging, chorus, double-tracking, reverb and other new effects came under the professional's control. Finally the full potential of time delay became apparent.

The AD202 Analog Delay flexes the full potential of time delay processing in an elegantly functional format. The Delay Selector allows instant switching of delay time into the chorus, flanging, doubling and discrete echo ranges. Delay time may be continuously varied within each delay range and may be automatically modulated for sweeping effects. The Regen control adjusts the intensity of short delay effects and the number of repeats of discrete echo. The Blend control sets the ratio of dry to delay signal. Input mixing allows the use of two mics or instrument and mic.

The Tone control lets the professional adjust the tonality of the delayed signal while leaving the dry signal unaffected. Two outputs provide the capability for multi-dimensional enhancement of the sound. LED's indicate essential functions and show the optimum input level. The AD202 Analog Delay --- the professional's choice for a full function delay.

**SPECIFICATIONS**

- **Input Impedance**: M/10K, 5K ohms (Unbalanced)
- **IN** 100K ohms (Unbalanced)
- **Input Sensitivity**: M/50 dBm to -30 dBm
- **Output Impedance**: -1K ohms
- **Output Level (MAX)**: 3 dBm
- **Delay Time Range/Freq**: Range 3.0 to 1.1 ms or 1.0 to 4.0 ms
- **Frequency Response**: -3 dB, +2 dB
- **Input: 60 - 600 MHz, 30 Hz - 2 KHz
- **Output: 12 - 75 MHz, 30 Hz - 7 KHz
- **Power Requirements**: 117 VAC, 60 Hz, 6.6 W
- **Dimensions**: 622 x 240 x 409 x 232 (mm)
- **Weight**: 3.6 kg, 8 lbs
When digital technology was in its infancy, digital became the ultimate digital device, leaving the analog world to the domain of conventional analog technology. But now, with the advent of solid-state digital conversion technology, digital and analog systems are becoming closer. The result is the mastering of complete digital systems, the digital world grows to include many functions previously left to analog solutions. New digital devices begin performing analog functions better than their analog counterparts. But as digital technology further develops, the digital world becomes more competitive with the analog counterparts. Today's digital technology has come to offer superior electrical performance in analog technology and its competitive at the forefront with analog audio technology.

Digital delays can offer improved signal-to-noise performance, such as better signal-to-noise ratios, distortion and bandwidth. They often acquire some of the limitations inherent in their analog counterparts, but the digital delays have the potential to offer superior performance in the audio scene. The Ibanez DM1000 Digital Delay is a new class of performance, designed to meet the needs of the increasingly competitive world of audio delay lines. The DM1000 combines the precision and features that are found on today's delays, resulting in three times the speed of a single delay line. A full function delay line, the DM1000 fits into a single enclosure, offering both 1/3rd and quarter rate delay, as well as a high-quality audio delay line. The DM1000 also comes with an extensive range of input levels and contains a feature to prevent system overload. The full complement of LED displays, essential functions, and optimum signal levels.

**SPECIFICATIONS**
- Delay Times: 800 milliseconds at full 7.5 kHz bandwidth.
- All delay time and effects are possible with the DM1000: long delay, multiple delay, and bending chorus and the industry's best-sounding 6:1 range.
- The continuous, variable delay, allows precise placement of all delay effects.
- A Hold function allows data to be held in memory indefinitely for subsequent playback, full musical integration. The near infinite resolution of data conversion allows the use of heavy amounts of repetition without noticeable digital conversion error.

**BLOCK DIAGRAMS**

The DM1000 Digital Delay is truly representative of today's state-of-the-art digital audio delays. It is designed to revolutionize the future delay.
HD1000 HARMONICS/Delay

The principles of digital signal processing into audio has not only revolutionized the performance of existing signal processors but has also made possible new types of signal processors. Pitch shifting or harmonic oscillators are one new class of processor. Digital technology now efficiently creates good quality, constant pitch shifts up or down in real time. This existing new capability has opened up new applications of signal processing for studios, EMI and broadcast situations.

A constant pitch shift can be used in modular situations to create metallic harmonics or moving down of audio material. To generate harmonics to make a sound more rich and full, to create the microshift that more closely resembles natural doubling and to create a wealth of tonal effects. PA applications pitch shift divides tonal harmonics and doubling tracks and are very useful in feedback control. In the studio all musical applications are useful and time compression is possible with a variable speed tape.

The HD1000 Harmonics Delay, includes a set of three pitch shift oscillators with a full spectrum digital delay, is simply the most versatile processor of this type in its price range. The pitch shift section can shift any signal up or down by 12 semitones (an octave is 12 semitones). The shifted signal remains pitch rich and full. The system is pitch stable and phase shifting is three times as much and it does include a full function delay. The delay section provides up to 320 milliseconds at 8kHz and up to 504 ms at 2kHz framing chorus doubling, delay, echo, room and flute echo with any order of the sounds featured in the delay section. The HD1000 represents the most advanced processor for the professional music industry.

The Pitch shift section (Pitch Enhancer) and fine tuning control with 300 to 10 cents (tenth of a half step). The shifted signal may be added in any combination with the dry signal, and the feedback path may be interconnected to create arrangements with an external delay. The pitch may be externally controlled with a computer or other controller for exciting real-time shifting effects.

The delay section features touch control of delay time, delay multiplier, delay shift select and bypass. The LED is a lamp with a maximum number of effects. Again the feedback path may be interchanged for processing the relationship and the mixing between dry and delay is continuously variable.

An LCD display indicates either delay time or pitch shift and also indicates optimum input level. Unbelievable, all of this fits in a compact, low profile height (10.4" high package that is made of simplicity to use. Remote bypass and stereo outputs help make the HD1000 the most complete processor available. The HD1000, the result of years of development is a part of Ibanez' continuing commitment to excellence and leadership.

**Rear Panel**

**Specifications**
- 13 independent
- Delay Time Range: 0 - 320 ms
- Bypass/Monitor: 1/2 kHz
- Frequency Response: 20 Hz - 20 kHz
- Power: 100 W
- Dimensions: 2U x 19" x 11.25"

**Block Diagrams**