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DM 1000

DIGITAL PRODUCTION CONSOLE

Version 2



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The DM Evolution Continues

19-inch Digital Production Console
For Professionals In the Studio Or On the Road



When the acclaimed Yamaha DM2000 console appeared on the production scene, it proved that true 24-bit/96-kHz performance, DAW integration, and surround production facilities were what the industry had been waiting for. With the introduction of the 02R96 the same benefits became available to a broader range of engineers and facilities, including project studios for music production. Now the Yamaha DM1000, like the DM2000, is designed especially for commercial post-production, audio for video, and broadcast applications. But extraordinary versatility and configurability mean that the DM1000 is also ideal for a wide range of sound reinforcement applications. The DM1000 Digital Production Console distills the essence of the DM2000 into a remarkably compact console that delivers the same level of performance and key features. And with the supplied Studio Manager Application software, all mix data is interchangeable between the DM2000, DM1000 and 02R96. These consoles can be linked and cascaded interactively within a multi-complex studio, or a tour engineer can do a basic console setup on his laptop computer anywhere, and then simply load the settings into the console at the venue.

Like its predecessor, the DM1000 delivers mixing power and performance that's way ahead of anything else on the market, and it even incorporates newly introduced software features such as 6.1 Surround, User Assignable Layer, and Global Recall Safe. The "DM evolution" continues. Never has so much mixing power and versatility been available in a compact, rack-mountable console.

With introduction of Version 2, the DM1000 evolves itself even further and enhance your mixing capabilities even higher.



From Analog to Digital and Back with Superior Sound

Proven Head Amplifier Design

The DM1000 features mic preamp circuitry directly derived from the highly regarded DM2000 Digital Production Console, so you know you're getting quality that's approved by leading professionals throughout the world. These mic preamps are the result of extensive development and field testing, and deliver warm, transparent performance that rivals — and in many cases exceeds — that of the most expensive component microphone preamplifiers. 48-volt phantom power for condenser microphones is individually switchable for each input, and pad switches and detented trim controls facilitate optimum level matching with the source. To eliminate interference in the analog stage, the power transformer is located as far as possible from the head amplifier section inside the compact DM1000 body.



24-bit/96kHz Onboard AD/DA Conversion

All onboard A/D and D/A conversion — on all 16 microphone/line inputs, all four OMNI inputs, and all 12 OMNI outputs — makes use of the finest linear 24-bit, 128-times oversampling converters which have been directly derived from the DM2000. These no-compromise converters — delivering flat response from 20Hz to 40kHz at 96kHz, and 106dB dynamic range from A/D to D/A — ensure that you don't lose any fine details or add any unwanted coloring in the process.



Big Mix Capacity with Uncompromised Performance



Full 48-channel Capacity up to 96kHz

Like the DM2000, 96kHz operation with 32-bit internal processing (58-bit accumulator) is standard in the DM1000 thanks to the latest and most powerful Yamaha DSP7 LSIs. We're talking about 48 channels of transparent, super-dynamic, 24-bit/96kHz audio with flat response from 20Hz through 40kHz — performance you'd expect to find only in the biggest and most expensive "mega-consoles" in the business. And you can run at 44.1, 48, 88.2 or 96kHz without compromising the console's processing capabilities.



Extraordinary Digital Patching Flexibility

All available physical inputs, channel inserts, effect returns, aux buses and program buses can be assigned to any of the console's channels, aux buses, program buses or physical outputs via the DM1000's remarkably versatile, easy-to-use digital patching system. You can even patch a single input to multiple channels, or a single bus to multiple output connectors. Patching via the graphic grid on the LCD panel is easy and efficient, or you can use the switches integrated into the encoders on each channel module. The Studio Manager software that comes with the console gives you a comprehensive graphical representation of your patch setup. Of course, patch setups you create can be stored in the patch library for instant recall whenever needed, and patch library memories can be linked to scene memories.



Input Patch

Top-quality Compression, Gating, EQ and Delay

All 48 input channels on the DM1000 feature the same advanced functions and features as the DM2000. There are flexible, independent compression and gating/ducking processors for dynamics control, 4-band parametric channel equalizers that offer extra versatility with switchable "type I" or "type II" EQ algorithms to deliver the response you prefer, and a channel delay with a maximum delay of 453 milliseconds. The equalizers offers particularly fine control with ±18dB gain control in 0.1dB increments, full frequency sweep from 20Hz to 20kHz, and 41-point variable Q on each band. There's also surround pan for up to 6.1 mixes, stereo pan, and phase switching. All channel functions except gating are also provided on all 18 of the console's (main, auxiliary, and stereo) output buses. An extensive list of preset EQ, Comp, and Gate "libraries" are provided for fast, easy setup, and user libraries are available for storage and instant recall of your own setups. Version2 even features comp/gate gain reduction metering on the meter display.



EQ Edit



Gate Edit

Flexible 20-bus Configuration

The DM1000 has eight output buses, eight auxiliary buses, a stereo buss, and stereo solo bus for a total of 20 mix buses. Auxiliary buses 1 through 8 can also be used as standard mixing buses thanks to a "fix" function that automatically sets all sends to nominal (0dB) level. Of course the auxiliary buses can be used as normal sends, or as sends to the console's built-in surround effects. The eight main buses can also be used for 6.1 surround mixing. A "bus to stereo" function that is ideal for creating submixes in sound reinforcement applications can also be used to downmix 6.1, 5.1, or 3-1 surround programs to stereo.



Bus to stereo

4 top-quality Multi Effect Processors Including Surround Effects

The DM1000 has four independent internal 24-bit/96-kHz stereo multi-effect processors that can be used simultaneously either for Send/Return or Insert assignments. A comprehensive selection of reverb, delay, modulation, and combination effects are provided, plus a range of newly developed effects including multiband dynamics. In addition to stereo effects, the DM1000 features a number of effect programs specifically designed for surround applications, such as "Comp 5.1" and "Reverb 5.1". (some surround effects use as many as four processors). An extensive range of detailed effect parameters are adjustable via easy-to-use graphic controls on the console's LCD screen. Or, if you prefer, you can use the Studio Manager software to edit with color graphics on a larger computer screen. And, like most other parameter groups, an extensive preset "library" is provided for fast, easy setup. Of course, you can add your own setups to the user library for instant recall whenever needed.



Reverb 5.1



Comp 5.1

ADD-ON EFFECTS Capability

Add-On Effects



Version 2



The DM1000 Version2 is compatible with Yamaha's outstanding Add-On Effects series (sold separately). According to your signal-processing needs you could add the Channel Strip package with high-performance EQ and compression capability, or the Master Strip Package for extraordinarily accurate sonic reproductions of some of the finest tape decks of audio's "golden age". There's also a Reverb Package featuring the latest REV-X reverb algorithms used in Yamaha's outstanding SPX2000, and other effect packages that can contribute to your production arsenal in a big way.



Comp260

Advanced User Interface

100-millimeter Motor Faders with Master Touch

The DM1000 is equipped with 17 touch-sensitive 100-millimeter motorized faders featuring smooth, quiet operation and precision level control. Touch sensitivity means convenient automatic channel selection and automix overwrite. Channel faders can also be assigned as aux send level control via the Fader Mode button. Layer switching allows these 16 channel faders to control channels 1-16, 17-32, 33-48 or Master (Aux1-8 and Bus1-8). There are also two Remote Layers which can be assigned to control DAW systems such as Pro Tools®, Nuendo®, Logic Audio®, or any MIDI device. Using the “User Assignable Layer” feature you can create a custom layer to which any channels can be assigned in a preferred layout, and the setups can be stored in any of four banks. This system means that you have a total of 96 channels and buses right in front of you in the space of 16. Instant switching of layers is a lot faster and easier than trying to locate a desired channel on a massive spread-out console. More importantly, all operations can be carried out without having to move away from the monitoring “sweet spot”.



Input Channel Layer 1-16
Input Channel Layer 17-32
Input Channel Layer 33-48
Master Layer
Remote Layer 1
Remote Layer 2
User Assignable Layer

Versatile Channel Pairing and Grouping Functions

In addition to being able to pair faders “horizontally”, corresponding faders in layers 1 and 2 can be “vertically” paired, allowing each physical channel fader to be used for stereo channel control. Up to 16 stereo channels can thus be controlled from a single layer with a whole list of linked parameters. With the DM1000 you can group faders and mutes from any selected input channels or output busses and store the settings in multiple banks. Furthermore, EQ and compressor parameter settings can be linked for simultaneous operation. The group and link functions are very convenient for various applications including sound reinforcement and surround production. An MS decoding function is also available for processing MS-pair microphone input.

Encoder Knobs

In addition to panning and auxiliary send level control, the integrated encoder/push-switches located above each fader can be used for a wide range of functions, selectable via the console’s assign mode. You can customize the console for optimum operability in just about any application.

Intuitive “Selected Channel” Interface

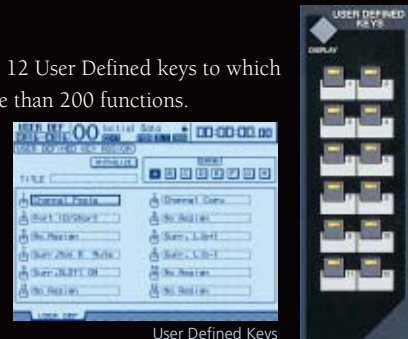
The Selected Channel controls are the “hands-on” channel controls for the currently selected input and output channel, with analog-style buttons and knobs for direct access and control of essential parameters. The DM1000’s Selected Channel control section includes Routing buttons, Channel EQ controls and a Joystick for surround panning.



User Defined Keys

DM1000 is equipped with 12 User Defined keys to which you can assign any of more than 200 functions.

The assignments can be stored in 8 banks. You can, for example, directly recall scenes, mute surround monitors, or control automix, DAW, or tape transport functions.



User Defined Keys

LCD Panel, Display Access and Navigation Buttons

A centrally-located 320 x 240 dot LCD display with fluorescent backlighting displays all detailed DM1000 functions in a simple and comprehensive format. A total of 21 Display Access buttons are provided for instant access to desired display pages. A dedicated Data Entry section and function keys below the screen ensure comfortable, efficient navigation and editing.

Scene Memory and Control

Scene Memory capability is an essential element of modern digital mixing consoles. With the DM1000 you can take a snapshot of just about any mix, effect and patch setup and store it in any of 99 scene memories. There are also fade time, and recall safe functions which can be applied globally as well as individually for each channel. Additional scene memories can be managed via memory cards or a computer running the supplied Studio Manager software. Like most other control sections, a DISPLAY key brings all scene parameters up on the LCD display panel. And for even greater versatility Version 2 features a global paste function that lets you simultaneously paste selected parameters from one scene to multiple scenes – your EQ and AUX settings from final rehearsal, for example, can easily be copied to all other scenes that will be used during the performance. Fade time and recall safe settings can also be copied to multiple scenes in one easy operation.



GLOBAL PASTE (SOURCE)



GLOBAL PASTE (DESTINATION)

Comprehensive Automation

The DM1000 features dynamic automation of virtually all mix parameters including levels, mutes, pan, surround pan, aux sends, aux send mutes, EQ and effects. Automix can be used to record a range of mixing events. You can also punch channels or parameters in and out on-the-fly, and edit parameters off-line with 1/4 frame accuracy. Remote layer operations, and Scene and library recall operations can also be automated, enabling you to create mix automation that combines snapshots and dynamic mix parameter changes. You can store up to 16 Automixes in the Automix Library. All Automix commands are accessible via the LCD screen, and can be assigned to the User Defined Buttons as required.

The Rear Panel

Reliable and Flexible Audio I/O's

Balanced XLR connectors are provided for all on-board 32 analog inputs and outputs. There are 16 channel inputs with individually switchable phantom power, plus four OMNI IN's. All 20 inputs feature XLR connectors with latches for maximum reliability, and these can be freely assigned to any internal channel – including the channel inserts. All 12 analog outputs are labeled “OMNI OUT” and have +24dB maximum output level. The outputs are also freely patchable to any output of the internal mixer – stereo outputs, auxiliary outputs, channel insert outputs, bus outputs, or control room/monitor outputs, as required by your system. Two digital 2-track inputs and outputs with both AES/EBU and coaxial connectors are also provided. On-board sample rate conversion allows CD players and other digital sources connected to the digital input to be monitored or routed to an input channel without having to be synchronized to the system clock. OMNI IN 1/2, 3/4 can be assigned as analog 2-track inputs for direct connection to the monitor section.

Professional Control I/O's

The DM1000's 9-pin D-sub REMOTE connector is compatible with Sony P2 protocol video editor control, as well as remote control of Yamaha's AD8HR 24-bit A/D converter unit. A 25-pin D-sub CONTROL connector provide access to the GPI (General Purpose Interface). Other Control Options include an XLR Connector for SMPTE time code input, independent word clock inputs and outputs, MIDI connectors, and a USB “to host” connectors.

I/O Expandability and Cascade Capability

The DM1000 has two Mini-YGDAI expansion slots, each capable of 16 I/O channels, for a total of 32 additional freely configurable I/O channels.

Whether you need digital I/O in ADAT, TASCAM, or AES/EBU format or extra analog I/O capability at standard or higher sampling rates, the appropriate Mini-YGDAI cards are available. Using the preferred digital I/O cards or OMNI I/O's, you can cascade two DM1000's to create a system that functions like one big console with integrated buses and linked functions.

Silent Cooling System

Attached on the left of the expansion slots is a heat sink that ensures rock-steady performance of DM1000 in continuous operation.

Metering

Built-in Visual Monitoring Features

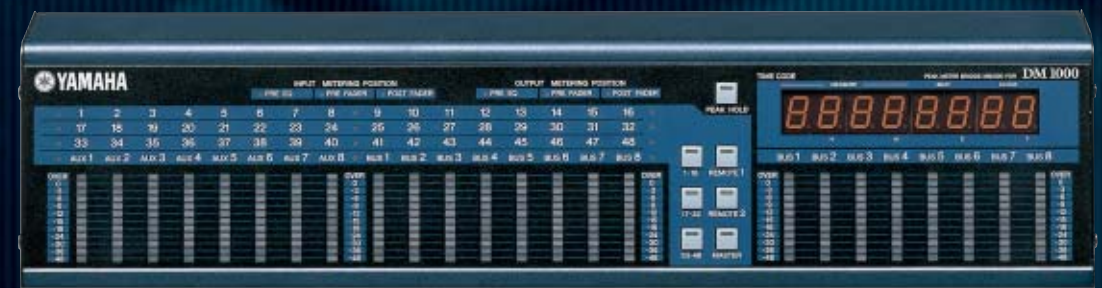
All channel and bus signals can be accurately monitored via graphic meters on the console's large LCD display panel. In addition to level metering the DM1000 provides gain reduction metering for the gate and compressor functions. A large 32-segment meter next to the console's display provides precision visual monitoring of signals on the stereo bus.

MB1000 Meter Bridge

The MB1000 Peak Meter Bridge is a complete level-monitoring station for the DM1000. 16 12-segment level meters can be used to display pre-EQ, pre-fader, or post-fader input channel signal levels as well as auxiliary and bus levels. An additional eight meters display levels on the console's main output buses. The MB1000 also features a time-code display that shows the time code or MIDI clock code being generated or received by the DM1000. When the DM1000 DAW remote layer is selected the MB1000 displays the value of the remote DAW channels.



Rear panel shown with optional mini-YGDAI cards installed.

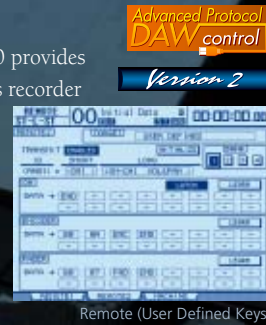


MB1000 Meter Bridge

DAW Integration

Pro Tools® and Nuendo® Control

When used with a DAW system the DM1000 provides physical control of mixer functions as well as recorder control. Control functions for Digidesign's Pro Tools® and Steinberg's Nuendo® digital audio workstation software are provided as standard libraries. By simply connecting the console to a computer via the TO HOST connector (combined USB and serial), the console's faders and encoders can be used for DAW control to create a seamless, efficient production environment. These libraries can be assigned to the console's remote layer as required. Just about any other DAW software can be accommodated via MIDI by creating an appropriate MIDI assignment table.



Remote (User Defined Keys)



Remote (Pro Tools)

Nuendo® Advanced Support and Pro Tools® Remote Joystick Control

In Version2 the DM1000 provides significantly enhanced DAW integration. When used with Nuendo 2.0, for example, the software's mixer channel EQ and surround pan functions can be accessed directly from the DM1000 selected channel controls. If Pro Tools is your DAW of choice you have direct control of Pro Tools surround panning via the DM1000 joystick.

Machine Control

The DM1000 can control external recorders via MMC and P2 commands – recorder transport functions, tracks assignment, etc. 12 User Defined keys can be assigned as dedicated tape transport or track arming buttons. It also supports ESAM II, a machine protocol used in the broadcast industry.



MACHINE CONTROL

Advanced Automix Function

Automix Static Insert

Versatility is further enhanced in Version2 with an automix static insert function that allows pre-defined parameter settings to be punched in and out to, for example, adjust the EQ for a short dialog sequence during pre-production.



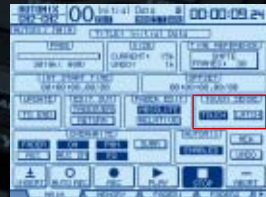
AUTOMIX STATIC INSERT



AUTOMIX STATIC INSERT

Touch-sensitive Intelligent Automix Parameter Punch I/O

This flexible system lets you set up the controls for the most efficient operation according to the signal flow and mixing task at hand. Version2 additionally includes a fader touch-sense function that allows automix parameter punch in/out operations to be carried with unprecedented speed and efficiency. When a fader is touched the parameter for that fader is punched in and the automix parameter overwrite mode is engaged. Two modes are provided: in the TOUCH mode the fader parameter is punched out and overwrite ends when the fader is released, and in the LATCH mode overwrite continues even after the fader is released.



TOUCH SENSE

Unmatched Sound and Efficiency For Sound Reinforcement

Mega-Console Capacity in a Lightweight, Compact Design

In a 19-inch console that weighs under 20 kilograms (approx. 44 pounds), you have capacity and performance that are equivalent to much larger (and much more expensive) sound reinforcement consoles. The DM1000 fits nicely in a 19-inch rack using the optional RK1 Rack Mount Kit (15U required, including space for the connectors). You can also rack mount the MB1000 Peak Meter Bridge using the rack angle brackets provided (3U required).



Channel Functions and Effects

Many of the functions that make the DM1000 perfect for production are a boon for sound reinforcement, too: independent gates and compressors on every channel, 4-band fully parametric EQ, delay, and more. All main buses, auxiliary buses, and the stereo bus feature the same channel functions (except gating) for extraordinary control.

The DM1000 also includes four top-performance stereo multi-effect stages that will give you all of the ambience and other effects you need for sound reinforcement without having to drag an outboard effect rack around.



Selected Channel Parameter View



Effect Input/Output Patch

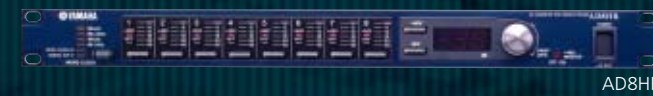
XLR Inputs and Outputs

DM1000 provides 16 channel inputs with individually switchable phantom power, plus four OMNI IN's. All 20 inputs feature XLR connector with latches for maximum reliability. The 12 outputs, all with XLR connectors, deliver 110dB dynamic range and +24dBu maximum output level. For many sound reinforcement applications a single DM1000 offers all the capacity and reliability you need.

AD8HR Head Amp remote Control

By using highest quality 8-channel Yamaha AD8HR head amp/AD converter* units you can set up a 32 microphone/line input sound reinforcement system with fully digital transmission from the head amps to the console. And since the AD8HR is remotely controllable via the DM1000 REMOTE connector, your head amps can be set up on stage for maximum sound quality and minimum in-house cabling. The digital output from the head amplifiers can be transmitted to the console in AES/EBU format over distances of up to 200 meters (@44.1/48kHz) with absolutely no loss in signal quality or added noise. If you also use the DM1000's on board mic inputs you have a total capacity of 48 mic input channels.

* The AD8HR operates at 44.1/48/88.2/96kHz.



AD8HR

Total Recall

The ability to store and recall all console parameters in an instant is a huge advantage for sound reinforcement applications. Of course it allows you to instantly switch "scenes" during a performance, but it also lets you recall the basic settings for a show at each venue, and then tweak to optimize the sound for that environment. This can dramatically reduce setup time. All scene data can also be managed on a personal computer using the supplied Studio Manager software. You can do basic setup on your laptop, and then transfer the data to the DM1000 at the venue. The DM1000 also lets you recall a scene with fade time, or apply "recall safe" for only the specified parameters and channels, or globally – for added creative control and flexibility.



GLOBAL FADE TIME

Flexible Fader Control

For optimum operability in sound reinforcement applications that demand on-the-fly real-time control of both inputs and outputs, the DM1000 features a User Assignable Layer function which allows specified input faders and bus/aux master faders to be assigned to a single layer so that the assigned input and outputs are right at your fingertips at all times. There's also pairing (horizontal or vertical) and grouping of fader and effect parameters.

Alternative Layer Control by Encoders

Encoder mode now features an assignable function, ALT LAYER, which enables you to control the channel level for all 48 channels without switching between layers.

Fader Group Master

Version2 features a group master function that allows group control of specified faders. By assigning the input and output fader masters to the console's user-assignable layer you have the operational equivalent of a large analog console equipped with 12 VCA faders.



INPUT FADER GROUP



INPUT FADER MASTER



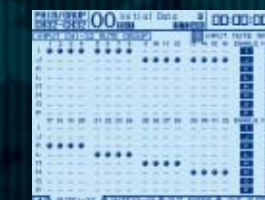
OUTPUT FADER GROUP



OUTPUT FADER MASTER

Group Master Mute

Version2 adds the capability to assign group master mute to the user defined keys. Any of the console's inputs and outputs can be assigned to mute groups as required, then muting of the assigned group can be engaged or disengaged with one touch via the user defined keys – a tremendous advantage in live sound applications.



INPUT MUTE



OUTPUT MUTE

AUX Pre-Fader/Pre-ON

Live sound engineers will really appreciate the new AUX pre-fader/pre-ON feature that allows monitor AUX output to be active at all times, regardless of whether the FOH send is on or off.

Instant AUX Monitoring (AUX/SOLO Link)

Another feature that will be an advantage in live sound applications is instant AUX monitoring; solo monitor any desired AUX signal simply by pressing twice the AUX Select button. The ability to instantly switch to AUX without having to switch the master layer can be an enormous advantage for monitor control.

Instant Group Assignment with User Defined Keys

Instant Group Assignment via the User Defined Keys enables you to quickly set up fader groups and mute groups. User Defined Bank F is preset for input group assignment. If you select a channel, the relevant User Defined Keys light up if the channel is in a fader or mute group. You can press a User Defined Key to add a channel to a group or exclude a channel from a group.

For Professional Surround Production

6.1 Ready

The DM1000 surround features are fully compatible with 3-1, 5.1 and 6.1 surround processing, panning and monitoring requirements.

With the DM1000 you can also change the order of the surround channel to bus out assignment according to project requirements. And since accurate monitoring is so essential to surround production, extra care was taken to ensure that the DM1000 offers the ideal mixing environment it includes a downmix matrix which can deliver 3-1 (LCRS) and stereo mixes while you are burning a surround mix to DVD, bass management, and speaker alignment facilities for optimum speaker system tuning. The DM1000 will even handle multiple surround stem mixes with ease.



SURROUND BUS SETUP

Surround Panning

The joystick is the perfect tool for smooth, continuous positioning of 6.1 surround sound. The DM1000 is equipped with an abundance of graphic surround displays: surround pan, trajectory patterns, and parameters to assist in accurate positioning and efficient "moves".



SURROUND PANNING



Surround Pan On/Off

Surround panning can be turned on or off as required by the application. When off, sources such as dialog that require no panning can be directly fed to the center bus. This capability can simplify signal routing in many situations.

Version 2

Surround Effects Built In

The DM1000's internal digital effect system includes "Reverb 5.1", "Comp 5.1", "Expand 5.1", and a number of other effects specifically designed for surround production. Bus EQ and dynamics can also be grouped for efficient surround processing.

* Some surround effects use as many as four effect processors.

6.1-to-Stereo Downmix Recording

A Bus-to-Stereo function can be used to provide a 6.1 to stereo, 5.1 to stereo, or 3-1 to stereo downmix recording while you are working on a surround mix. Furthermore, the 3-1 output can be fed to a 2-track master recorder via a Dolby Surround® encoder, and then back to the console via a decoder to allow instant real-time comparison between the pre-encode and post-decode sound.

* See Surround diagram.

Snap to SPL 85dB

A "Snap to 85dB" function instantly sets the surround monitor level to the standard 85dB SPL. And if you're mixing to THX™ standards, you can use a short-cut key to set levels instantly and precisely to the theater-standard of 85dB SPL. In fact, the DM2000V2, 02R96V2 and DM1000V2 are the world's first console to receive THX pm3™ Approval, so by combining it with Yamaha's MSP10 STUDIO powered monitor speakers – also THX pm3™ Approved – you have a state-of-the-art production studio that is capable of turning out sound of the highest quality – just like a THX Certified Studio.

Comprehensive Surround monitoring Environment

The DM1000 features comprehensive surround monitoring functions that enable optimum monitoring of surround sources on the buses or stem mixes input from either of the expansion slots. Surround monitoring functions include downmixing (which enables you to monitor signals on fewer channels) and fine tuning of surround channel signals according to the monitoring environment. The DM1000 downmix monitoring matrix makes it possible, for example, to monitor a 5.1 surround program in 3-1, or stereo, switching between modes instantly without affecting the recorder sends. Bass Management is important for optimizing channel signals and subwoofer delivery for the monitoring environment. The DM1000 has 8 preset bass management modes (included 3 THX Presets) for DVD or film mixing and authoring. You can also fine-tune individual filter and attenuation parameters.

Other features include an oscillator for testing speakers, individual attenuator and delay parameters for monitor alignment, individual bus (speaker) muting, and overall level control for all monitor outputs.

Version 2



BASS MANAGEMENT



SURROUND MONITOR



THX pm3™ Approval

Yamaha Digital consoles DM2000V2, DM1000V2 & 02R96V2 are the worlds first digital consoles equipped with complete surround monitoring facilities built-in, eliminating the need to connect and feed the signal to external monitoring equipment and offer perfect solution used in combination with the Powered Monitor Speaker MSP10 STUDIO.

Known worldwide for high quality entertainment sound and picture, the THX pm3™ (Professional Multi-Channel Mixing & Monitoring) Studio Certification Program addresses the need for reliable, translatable, and superior performance in professional multi-channel mixing and monitoring studios worldwide. THX has created a performance standard that focuses on the listening and viewing environment, selection of audio and video equipment, layout of the working area, and calibration. DM2000V2, DM1000V2 & 02R96V2 are included in the THX pm3™ Approved Equipment list as Studio Monitoring Systems, and Powered Monitor Speaker MSP10 STUDIO as Front & Surround speakers.

Yamaha Digital Consoles have the following surround functions built-in.

Surround production functions

- Fully compatible with 3-1, 5.1 and 6.1 surround processing, panning and monitoring
- Flexible surround bus set up
- Built-in Joy stick
- Graphical user interface and parameters to assist accurate surround PAN positioning and efficient moves of sound image.
- Built-in surround effects including "Reverb 5.1", "Comp 5.1", "Expand 5.1" etc.



SURROUND PAN POSITIONING

THX pm3™ Approved surround monitoring functions

- Downmix monitoring matrix
- Bass Management: comprehensive filter and attenuator setting and THX pm3™ presets
- Monitor Alignment functions (Attenuator and delay for individual speakers)
- Build-in Oscillator
- "Snap to 85dB SPL" function



SURROUND MONITOR SETUP (THX pm3™ MONITOR FLOW)

THX Bass Management Presets:

The following presets have been approved by THX™ Ltd. for use in THX pm3™ Certified Studios*. They are designed to provide dedicated parameters for the proper playback of multi-channel audio content in bass managed systems and to be compatible with subwoofer-satellite type consumer systems.

* Use of a THX preset does not permit a studio to use the designation THX pm3™ Certified Studio. The THX pm3™ Studio Certification Program uses performance and design specifications to create calibrated environments for optimum sound and picture presentation. For more information, visit the THX website at <http://www.thx.com>

| | |
|------------------|---|
| [THXD] THX DVD | This preset is configured for DVD-Video production. Use this preset when mixing and/or monitoring audio content not from a theatrical film source. The parameters cannot be changed. |
| [THXF] THX Film | This preset is configured for Film pre-production. Use this preset when mixing and/or monitoring theatrical film-based content (such as a pre-mix for film). The parameters cannot be changed. |
| [THXM] THX Music | This preset is configured for DVD-Music production. Use this preset when mixing and/or monitoring multi-channel music content (including DVD-Audio and SACD). Only one parameter can be changed. The LFE gain (AMP) can be set to +10dB (default) or 0dB. Select the level that complies with the standards of the target media. Please note: The LFE output gain on some DVD players, receivers, and/or decoders may already be set to +10dB. Select the 0dB setting only if the destination environment (home theatre, etc.) has the LFE gain set to 0dB. Otherwise, use the default setting. |

The THX pm3™ logo is a trademark of THX Ltd. which may be registered in some jurisdictions. All rights reserved.

For more information on THX pm3™, please visit THX website at <http://www.thx.com>.

Visit Yamaha website at <http://www.yamahaproaudio.com/> to find DM2000/1000, 02R96 surround set up manual, Quick Guide and Surround Tutorial Booklet.



Studio Manager Version 2



The DM1000 comes supplied with Yamaha's Studio Manager software application for both Macintosh and Windows platforms. Studio Manager gives you access to DM1000 parameters for either on-line or off-line control with easy-to-read visual reference to parameter settings. Of course you can use the Studio Manager while connected to the DM1000 via USB for real-time control, but you can also use the program off-line — on a portable computer, for example — to make rough adjustments or preliminary settings that can be finalized when you actually connect to the console. The Studio Manager can manage an extensive archive of mix data, scene memory and library files, and it can be used as a medium to exchange data between the DM1000 and a DM2000, 02R96 or 01V96. The DM2000, DM1000, 02R96 and 01V96 share a common Studio Manager graphical interface. The only differences are in the number of channels, aux sends, matrixes, and effects provided by each console. Session files can be opened from each other, and most libraries are interchangeable, too.

The Studio Manager includes the following main display pages:

DM1000 Editor

The DM1000 Editor runs under the Studio Manager Version2 host application, and offers features and functionality that have been refined and updated for professional-level control. Some of the most significant updates include:

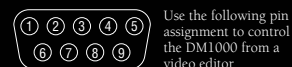
- Master Fader Window provides independent master fader display and control.
- Meter Window shows levels on all 48 channels.
- A new Automix Library Window has been added to the library windows.
- Layer Window allows selection and display of effects and other sources above the panel pan controls.
- Selected Channel Window adds graphic gate displays and long-stroke channel metering.
- Patch Edit Window is now resizable, and displays effect block inputs and outputs.
- Effect Editor Window adds Add-On Effects interface and fine control.

In and Out of the Broadcast Studio

Controllable from a video editor using the ESAM II protocol Version 2

Since the DM1000 Version2 supports most features of the 03D Video Edit Suite Software (03DVEK) for the 03D digital mixing console, it is controllable from one of many video editors of various brands, through the REMOTE port connection.

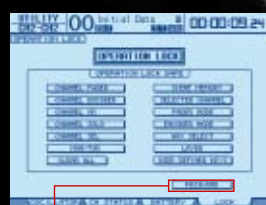
Pin Assignment of the REMOTE Port



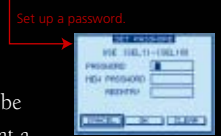
| Pin# | Video Editor | DM1000 REMOTE Port |
|------|------------------------|------------------------|
| 1 | Frame Ground | Frame Ground |
| 2 | Receive A | Receive A (*) |
| 3 | Transmit B | Transmit B (*) |
| 4 | Transmit Signal Common | Transmit Signal Common |
| 5 | Spare | Spare |
| 6 | Receive Signal Common | Receive Signal Common |
| 7 | Receive B | Receive B (*) |
| 8 | Transmit A | Transmit A (*) |
| 9 | Frame Ground | Frame Ground |

* For bidirectional control, cross-connect Pins 2 and 8, and Pins 3 and 7 on an I/O cable.

on/off. A password-protected Operation Lock function can prevent accidents during broadcasts. There's even built-in MS decoding function that eliminates the need for external matrix transformers for MS microphones when you are using DM1000 for ambient location recording. Broadcast stations around the world have different requirements of their own for the standard maximum analog output level. DM1000 default level is set at +24dBu. This can be modified, upon request, to +20, +18 or +15dBu at a Yamaha service center (Please note this modification is chargeable). Also DM1000 features an "Output Port Attenuator" menu, which provides attenuation from the default 0dB through -9dB on the software for a quick solution.



OPERATION LOCK



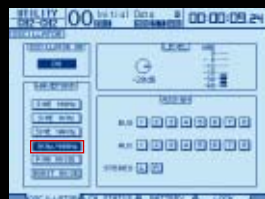
OPERATION LOCK

An Extraordinary Broadcast Mixer, Too

The DM1000 even incorporates a number of features that can be extremely valuable in broadcast applications. There's Mix Minus, for example, that makes it possible to instantly remove the announcer from a mix. Vertical pairing of stereo source is extremely useful, too. DM1000 Oscillator is capable of sending simultaneously sine wave of 400Hz and 1kHz respectively to L, R and odd/even buses to check the signal path. The GPI interface provides control interoperability with other broadcast studio equipment such as fader start and talk back



MIX MINUS



OSCILLATOR

Fader Solo Release and Pre-Fader with Pan Version 2

Of particular interest to broadcast engineers will be the new fader solo release and pre-fader with pan functions included in Version2. Fader solo release allows instant, automatic switchover from solo source monitoring to mixing. Pre-fader with pan also provides a post-pan monitoring option.



Studio Manager V2 Host Window



Meter Window



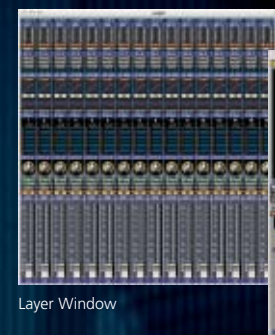
Surround Editor Window



Library Window (Automix)



Library Window (Effect)



Layer Window



Master Window



Patch Editor Window



Patch Editor-Effect Window



Selected Channel Window



SPX 2000 Editor (REV-X)

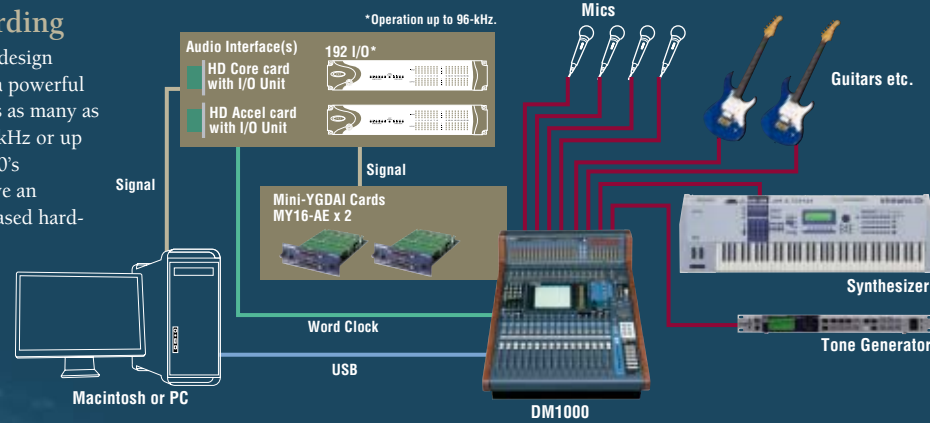
ADD-ON EFFECTS



Production, sound reinforcement, broadcast, theater ... the DM1000 has the performance and versatility to work wonders in just about any application.

Computer-based 96-kHz Recording

In this system the Yamaha DM1000 and a Digidesign Pro Tools® HD2 Accel setup are combined in a powerful recording and production system that provides as many as 64 input channels with up to 192 tracks at 48 kHz or up to 96 tracks at 96 kHz. Add to this the DM1000's advanced control surface features, and you have an extraordinarily powerful, efficient computer-based hard-disk recording system. You can combine the DM1000 with Steinberg's Nuendo® or emagic's Logic Audio® workstation software, too. While the DM1000 functions as an advanced control surface for the software, it can also handle critical audio processing tasks as well as monitoring.

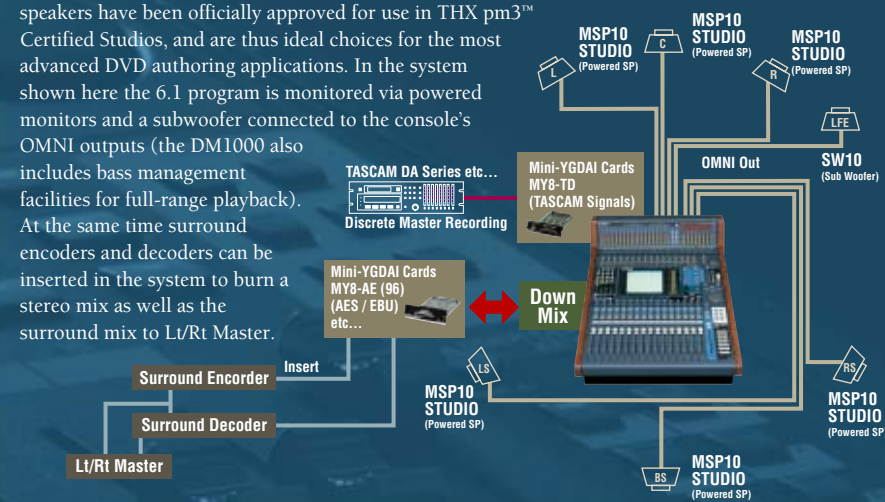


Connection with 96-kHz recorders & Workstations

Although the DM1000 handles 96-kHz audio as standard, most of the currently available digital recorders can handle 96-kHz audio only in double channel mode (using 2 tracks to make one). In this configuration, the DM1000 uses one channel for one (96-kHz) track, but twice the number of I/O connections must be used. MY8-AT/TD/AE cards work in double channel mode to handle 96-kHz audio. The MY16-AT/TD/AE cards can handle 16 channels of 44.1 / 48-kHz audio or up to 8 channels of 96-kHz audio in double channel mode. With the latest equipment that handles 96-kHz audio as standard (in double speed mode like the DM1000) you can make standard connections using the MY8-AE96 card. MY8-AE96 card can work either in double speed or double channel mode.

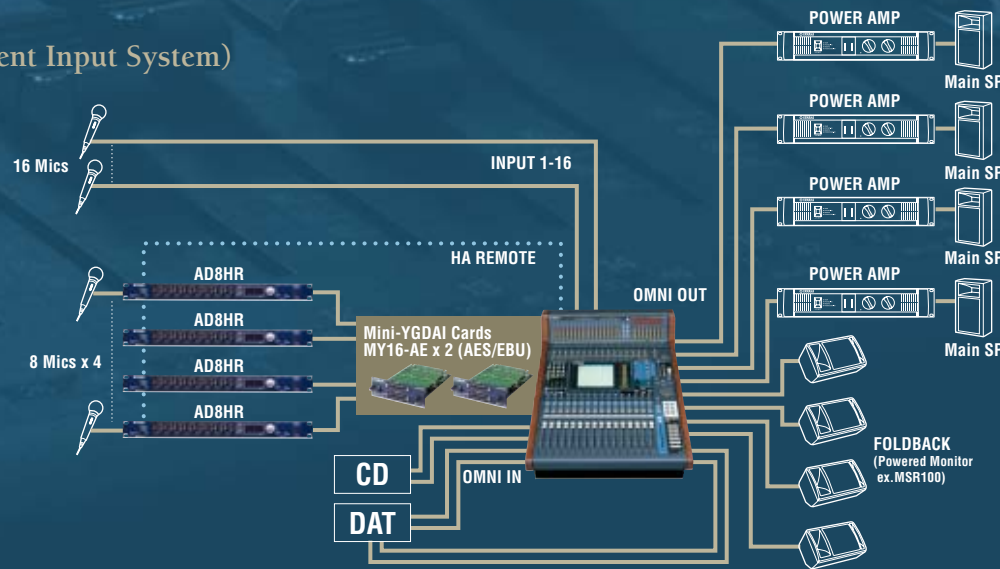
DVD Authoring (6.1 Surround Monitoring)

Both the DM1000 and Yamaha's MSP10ST powered studio monitored speakers have been officially approved for use in THX pm3™ Certified Studios, and are thus ideal choices for the most advanced DVD authoring applications. In the system shown here the 6.1 program is monitored via powered monitors and a subwoofer connected to the console's OMNI outputs (the DM1000 also includes bass management facilities for full-range playback). At the same time surround encoders and decoders can be inserted in the system to burn a stereo mix as well as the surround mix to Lt/Rt Master.



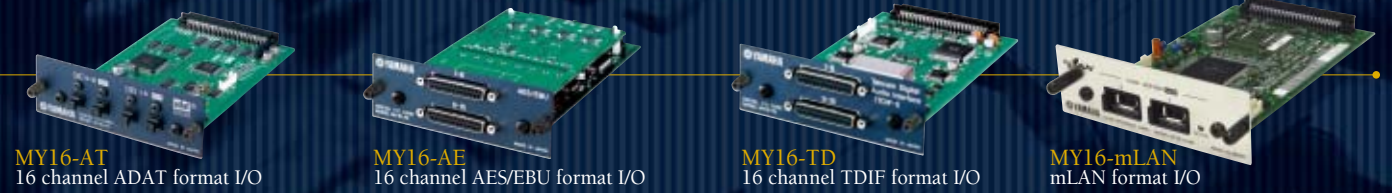
Sound Reinforcement (48 Remote Mic/Instrument Input System)

Sound reinforcement applications generally require much more input capacity than studio production. You can connect up to 32 microphone/line inputs via 24-bit 8-channel Yamaha AD8HR high quality head amp/AD converter units, with fully digital transmission from the head amps to the console. Since the AD8HR is remotely controllable via the DM1000 REMOTE connector, your head amps can be set up on stage up to 200 meters (@44.1/48kHz) away for maximum sound quality and minimum in-house cabling. The DM1000's built-in dynamics and effects can be a tremendous advantage in this type of application, too.

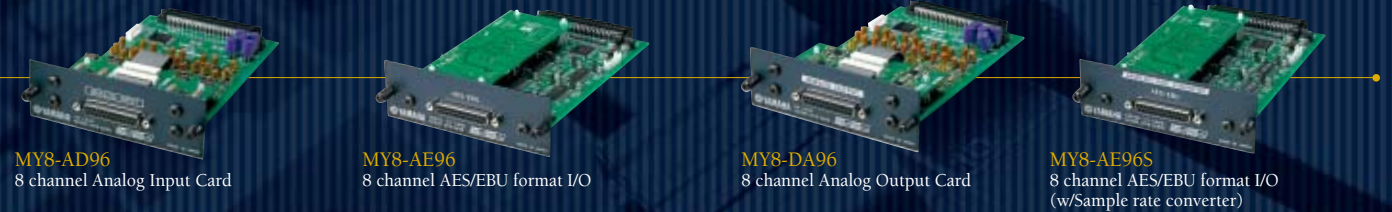


The DM1000's real I/O versatility comes in the form of four mini-YGDAI expansion slots. The expansion slots are 24 bit/96-kHz compatible, so you can select mini YGDAI plug-in cards to create the input/output configuration that's perfect for your needs. Whether you need digital I/O in ADAT, TASCAM, or AES/EBU format connectivity, extra analog I/O capability, or other functions, the appropriate cards are available. Using the preferred digital I/O cards or OMNI I/O's, you can cascade two DM1000's to create a system that functions like one big console with integrated buses and linked functions.

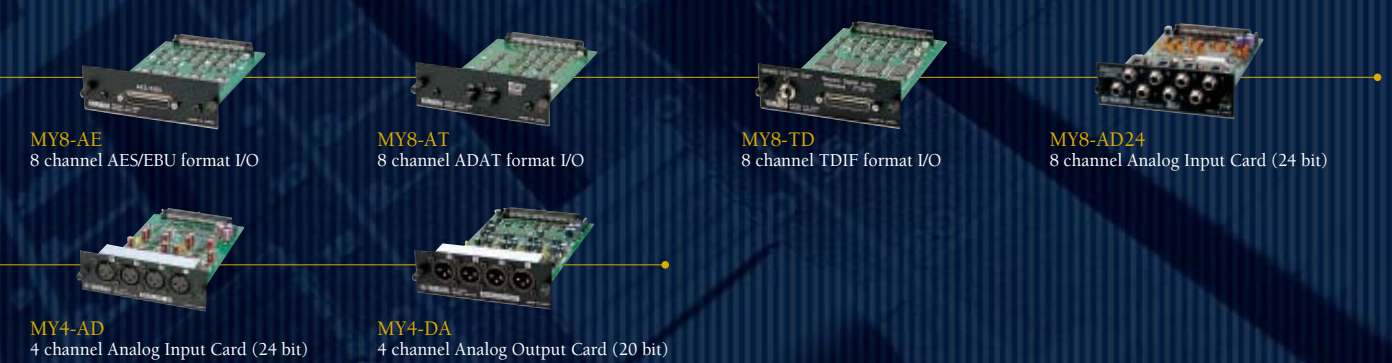
16 I/O Series



96-kHz Series



Standard Series



Plug-in DSP card



The Y96K contains many of Waves "greatest hits", including Waves Renaissance Compressor and EQ, TrueVerb reverb, L1 Ultramaximizer, SuperTap delay, and DeEsser. These processors are all available in addition to your on-board effects.

Developed, Manufactured & Supported by:

 Exclusively distributed worldwide by:
YAMAHA CORPORATION
 For details, go to Y96K product page at www.waves.com or www.yamahaproaudio.com

MB1000 Peak Meter Bridge



SP1000 Side Pad



RK1 Rack Mount Kit



ADD-ON EFFECTS

Software packages are available for adding unique and valuable effect programs to the DM1000 internal effect programs. You can edit, store and recall ADD-ON EFFECTS on the console in the usual way.

In addition, a special GUI is available in the DM1000 editor to manage these effects.

CHANNEL STRIP PACKAGE (AE-011)

This Package includes 5 models that employ VCM (Virtual Circuitry Modeling) technology to recreate the sound and characteristics of several classic compression and EQ units from the 70's.



- Includes five models that employ VCM technology to recreate the sound and characteristics of classic compression and EQ units from the 70's.
- Fine-tuned by leading engineers, and featuring carefully selected parameters in a simple interface.
- **Compressor 276 (mono)/Compressor 276S (stereo):** Recreate the fast response, frequency characteristics, and tube-amp saturation of the most in-demand analog compressors for studio use.
- **Compressor 260 (mono)/Compressor 260S (stereo):** Features faithful modeling of the solid-state VCA and RMS detection circuitry of the late 70's for live sound reinforcement applications.
- **Equalizer 601:** Delivers the unique characteristics of 70's analog EQ circuitry, featuring graphical editing capability on both the console and PC displays.



Compressor 260(mono)/Compressor 260S

MASTER STRIP PACKAGE (AE-021)

The Master Strip Package Open Deck employs Virtual Circuitry Modeling technology to recreate both the analog circuitry and tape characteristics that shaped the sound of open-reel tape recorders.



- Employs VCM technology to recreate both the analog circuitry and tape characteristics that shaped the sound of open-reel tape recorders.
- The Open Deck provides models of four machine types: Swiss '70, Swiss '78, Swiss '85, and American '70. You can even combine different record and playback decks for a wider range of variation.
- You also have a choice of "old" and "new" tape types, tape speed, bias, and EQ settings that can vary the "focus" of the sound, distortion, and saturation characteristics.



Swiss '70 with New

REVERB PACKAGE (AE-031)

The REV-X programs feature the richest reverberation and smoothest decay available, based on years of dedicated research and development.



- Reverb ADD-ON EFFECTS employing the latest REV-X algorithms first introduced in Yamaha's SPX2000 Professional Multi Effect Processor.
- The REV-X programs feature the richest reverberation and smoothest decay available, based on years of dedicated research and development.
- Hall, Room, and Plate programs are provided.
- The Hall and Room programs have a very open sound, while Plate delivers a brighter tonality that is ideal for vocals.



REV-X PLATE

SURROUND POST PACKAGE (AE-041) *Coming Soon*

The Surround Post Package uses Yamaha's Interactive Spatial Sound Processing technology that takes full advantage of the 96-kHz audio DSP power of the Yamaha digital consoles. The AE-041 will include three effect programs: Room ER, Auto Doppler and Field Rotation. These unique effect programs not only can vastly simplify the complex operation in Post-Production requirements, but also can be used creatively in the musical context.



WHAT IS ISSP?

ISSP stands for "Interactive Spatial Sound Processing," and is a new sound effect system created originally by Yamaha. Designed through comprehensive and extensive research, this technology offers unparalleled reality, operability and originality. It delivers unprecedented soundfield positioning and highly realistic sound source movement effects, with simple operation that allows simulations.

VINTAGE STOMP PACKAGE (AE-051) *Coming Soon*

In this package Virtual Circuitry Modeling technology delivers faithful models of classic much-in-demand stomp boxes from the 70's that helped shape the sound of music history. The AE-051 package will include three phaser models: the MAX100, Vintage Phaser, and Dual Phase. Although the vintage equipments are hard to come by, they are in considerable demand for both live performance and studio production. All models feature graphical user interfaces that reflect the image of the times.



WHAT IS VCM TECHNOLOGY?

VCM (Virtual Circuitry Modeling) technology actually models the characteristics of analog circuitry - right down to the last resistor and capacitor. VCM technology goes well beyond simply analyzing and modeling electronic components and emulating the sound of old equipment. It's capable of capturing subtleties that simple digital simulations cannot even approach, while actually creating ideal examples of sought-after vintage gear.

GENERAL SPECIFICATIONS

| | |
|--|---|
| Internal Signal Processing | 32-bit (Accumulator 58-bit) |
| Sampling Frequency | Internal : 44.1kHz, 48kHz, 88.2kHz, 96kHz External : Normal rate 44.1kHz-10% - 48kHz±6% : Double rate 88.2kHz-10% - 96kHz±6% |
| Signal Delay | Less than 1.6ms CH INPUT to OMNI OUT (@Sampling frequency = 48kHz) Less than 0.8ms CH INPUT to OMNI OUT (@Sampling frequency = 96kHz) |
| Fader | 100mm motorized with touch sense x 17 |
| Total Harmonic Distortion* Input Gain=Min. CH INPUT to OMNI OUT | Less than 0.05% 20Hz to 20kHz @+14dB into 600 Ω Less than 0.01% 1kHz @+24dB into 600 Ω Less than 0.05% 20Hz to 40kHz @+14dB into 600 Ω Less than 0.01% 1kHz @+24dB into 600 Ω (@Sampling frequency = 96kHz) |
| Frequency Response CH INPUT to OMNI OUT | 0.5, -1.5dB 20Hz - 20kHz @+4dB into 600 Ω (@Sampling frequency = 48kHz) 0.5, -1.5dB 20Hz - 40kHz @+4dB into 600 Ω (@Sampling frequency = 96kHz) |
| Dynamic Range (maximum level to noise level) | 110dB typ. DA Converter (OMNI OUT) 106dB typ. AD+DA (to OMNI OUT) @fs=48kHz 106dB typ. AD+DA (to OMNI OUT) @fs=96kHz |
| Hum & Noise** (20Hz-20kHz) Rs=150 Ω Input Gain =Max. Input Pad =0dB Input Sensitivity =-60dB | -128dB Equivalent Input Noise. -86dB residual output noise. OMNI OUT STEREO OUT off. -86dB (90dB S/N) OMNI OUT STEREO fader at nominal level and all CH INPUT faders at minimum level. -64dB (68dB S/N) OMNI OUT STEREO fader at nominal level and one CH INPUT fader at nominal level |
| Maximum Voltage Gain | 74dB CH INPUT (CH1-16) to OMNI OUT (STEREO, BUS, AUX) (via STEREO bus) |
| Crosstalk (@1kHz) Input Gain=Min. | 80dB adjacent input channels (CH1-16) 80dB input to output. |
| * Total Harmonic Distortion is measured with a 6dB/octave filter @80kHz. ** Hum & Noise are measured with a 6dB/octave filter @12.7kHz; equivalent to a 20kHz filter with infinite dB/octave attenuation. | |
| Power Requirements | U.S./Canada 120V 135W 60Hz CE 220-240V 135W 50/60Hz |
| Dimensions (W x D x H) | DM1000: 436 x 585 x 200mm DM1000+MB1000+SP1000: 486 x 635 x 295mm |
| Net Weight | DM1000: 20kg MB1000: 2kg SP1000: 2kg |
| Operating free-air temperature range | 10-35°C |
| Storage temperature range | -20-60°C |
| Accessories | AC Cable, CD-ROM (Studio manager) |
| Options | Digital interface card (MY16, MY8, MY4 series) PEAK METER BRIDGE: MB1000 SIDE PAD: SP1000 RACK MOUNT KIT: RK1 |

Number of Scene Memories: 99

LIBRARIES

| | Number of factory presets | Number of user libraries |
|------------------------------|---------------------------|--------------------------|
| Effect libraries (EFFECT1-4) | 61 (EFFECT2-4: 53)*1 | 67 |
| Compressor libraries | 36 | 92 |
| Gate libraries | 4 | 124 |
| EQ libraries | 40 | 160 |
| Channel libraries | 2 | 127 |
| Surround Monitor libraries | 1 | 32 |
| Input patch libraries | 1 | 32 |
| Output patch libraries | 1 | 32 |
| Bus to stereo libraries | 1 | 32 |

*1 Effects 53-61 are optional Add-On Effects. These effects become fully available after installation and authorization. Prior to installation effects 53-61 function in demo mode only.

AVAILABLE MINI-YGDAI CARD SPECIFICATIONS

Yamaha

| Maker | Model | Function | IN | OUT | Format | Res / Freq | Connector | Note |
|--------|-----------|----------------|----|-----|-----------|----------------------------|-------------|---|
| Yamaha | MY8-AT | Digital I/O | 8 | 8 | ADAT | 24 bit 44.1/48 kHz | Toslink x 2 | Can handle 24 bit/96 kHz by double channel mode |
| | MY8-AE | Digital I/O | 8 | 8 | AES/EBU | 24 bit 44.1/48 kHz | D-sub 25pin | Can handle 24 bit/96 kHz by double channel mode |
| | MY8-TD | Digital I/O | 8 | 8 | TDIF | 24 bit 44.1/48 kHz | D-sub 25pin | Can handle 24 bit/96 kHz by double channel mode |
| | MY8-AD24 | A to D In | 8 | - | - | 24 bit 44.1/48 kHz | TRS x 8 | Replacing MY8-AD (20 bit 44.1/48 kHz) |
| | MY4-AD | A to D In | 4 | - | - | 24 bit 44.1/48 kHz | XLR x 4 | |
| | MY4-DA | D to A Out | - | 4 | - | 20 bit 44.1/48 kHz | XLR x 4 | |
| | MY8-AD96 | A to D In | 8 | - | - | 24 bit 44.1/48/88.2/96 kHz | D-sub 25pin | |
| | MY8-DA96 | D to A Out | - | 8 | - | 24 bit 44.1/48/88.2/96 kHz | D-sub 25pin | |
| | MY8-AE96S | Digital I/O | 8 | 8 | AES/EBU | 24 bit 44.1/48/88.2/96 kHz | D-sub 25pin | Sampling Rate Converter for Input, 3 cards max. with DM1000 |
| | MY8-AE96 | Digital I/O | 8 | 8 | AES/EBU | 24 bit 44.1/48/88.2/96 kHz | D-sub 25pin | |
| | MY16-AT | Digital I/O | 16 | 16 | ADAT | 24 bit 44.1/48/88.2/96 kHz | Toslink x 2 | Can handle 24 bit/96 kHz by double channel mode |
| | MY16-AE | Digital I/O | 16 | 16 | AES/EBU | 24 bit 44.1/48/88.2/96 kHz | D-sub 25pin | Can handle 24 bit/96 kHz by double channel mode |
| | MY16-TD | Digital I/O | 16 | 16 | TDIF | 24 bit 44.1/48/88.2/96 kHz | D-sub 25pin | Can handle 24 bit/96 kHz by double channel mode |
| | MY16-mLAN | mLAN Interface | 16 | 16 | IEEE 1394 | 24bit, 44.1/48kHz | 1394 6pin | Check instructions for multiple use |

Third Party

| Maker | Model | Function | IN | OUT | Format | Res / Freq | Connector | Note |
|-------|-------|--------------|----|-----|------------|---------------------------|-------------|-------------------------------------|
| Waves | Y96K | Effect & I/O | 8 | 8 | Effect&I/O | 24bit, 44.1/48/88.2/96kHz | Toslink x 2 | Check instructions for multiple use |

Guidance on the use of Mini-YGDAI cards: Go to www.yamahaproaudio.com to check "Guidance on the use of Mini-YGDAI cards"

ANALOG INPUT CHARACTERISTICS

| Input Terminals | PAD | GAIN | Actual Load Impedance | For Use With Nominal | Input Level | | | Connector in Console |
|-----------------|-----|-------|-----------------------|----------------------------|-----------------|-----------------|-------------------------------|----------------------------|
| | | | | | Sensitivity* 1 | Nominal | Max. before clip | |
| CH INPUT 1-16 | 0 | -60dB | 3kΩ | 50-600 ΩMics & 600 Ω Lines | -70dB (0.245mV) | -60dB (0.775mV) | -40dB (7.75mV) | XLR-3-31 type (Balanced)*2 |
| | 20 | -16dB | | | -26dB (38.8mV) | -16dB (0.123V) | +4dB (1.23V) (+24dB (12.28V)) | |
| OMNI IN 1-4 | | | 10kΩ | 600Ω Lines | +4dB (1.23V) | +4dB (1.23V) | +24dB (12.28V) | XLR-3-31 type (Balanced)*2 |

*1 Sensitivity is the lowest level that will produce an output of +4dB (1.23V) or the nominal output level when the unit is set to maximum gain. (all faders and level controls are maximum position.)
*2 XLR-3-31 type connectors are balanced. (1=GND, 2=HOT, 3=COLD)
* In these specifications, when dB represents are specific voltage, 0dB is referenced to 0.775 Vrms.
• All input AD converters (CH INPUT 1-16, OMNI INPUT 1-4, TALKBACK) are 24bit linear, 128times oversampling.
• +48V DC (phantom power) is supplied to CH INPUT (1-16) XLR type connectors via each individual switch.

ANALOG OUTPUT CHARACTERISTICS

| Output Terminals | Actual Source Impedance | For Use With Nominal | Output Level | | Connector in Console |
|------------------|-------------------------|----------------------|---------------|------------------|--|
| | | | Nominal | Max. before clip | |
| OMNI OUT 1-12 | 150Ω | 600Ω Lines | +4dB (1.23 V) | +24dB (12.28V) | XLR-3-32 type (Balanced)*1 |
| PHONES | 100Ω | 8Ω Phones | 4mW | 25mW | Stereo Phone Jack (TRS) (Unbalanced)*2 |
| | | 40Ω Phones | 12mW | 75mW | |

*1 XLR-3-32 type connectors are balanced. (1=GND, 2=HOT, 3=COLD)
*2 PHONES stereo phone jack is unbalanced. (Tip=LEFT, Ring=RIGHT, Sleeve=GND)
• In these specifications, when dB represents are specific voltage, 0dB is referenced to 0.775 Vrms.
• All output DA converters (OMNI OUT 1-12, PHONES) are 24bit, 128times oversampling.

DIGITAL INPUT CHARACTERISTICS

| Terminal | Format | Data length | Level | Connector in Console |
|-----------------|---------------|-------------|------------|----------------------------|
| 2TR OUT DIGITAL | 1 AES/EBU*1 | 24bit | RS422 | XLR-3-31 type (Balanced)*1 |
| | 2 IEC-60958*2 | 24bit | 0.5Vpp/75Ω | phone |

*1 XLR-3-31 type connectors are balanced. (1=GND, 2=HOT, 3=COLD)

DIGITAL OUTPUT CHARACTERISTICS

| Terminal | Format | Data length | Level | Connector in Console | |
|-----------------|---------------|------------------|---------|----------------------|----------------------------|
| 2TR OUT DIGITAL | 1 AES/EBU*1 | Professional use | 24bit*3 | RS422 | XLR-3-32 type (Balanced)*4 |
| | 2 IEC-60958*2 | Consumer use | 24bit*3 | 0.5Vpp/75Ω | |

*1 channel status of 2TR OUT DIGITAL 1 type: linear PCM
emphasis: NO
sampling rate: depends on the internal configuration
*2 channel status of 2TR OUT DIGITAL 2 type: linear PCM
category code: Digital signal mixer
copy prohibitive: NO
emphasis: NO
clock accuracy: Level II (1000 ppm)
sampling rate: depends on the internal configuration
*3 dither: word length 16/20/24 bit
*4 XLR-3-32 type connectors are balanced. (1=GND, 2=HOT, 3=COLD)

CONTROL I/O CHARACTERISTICS

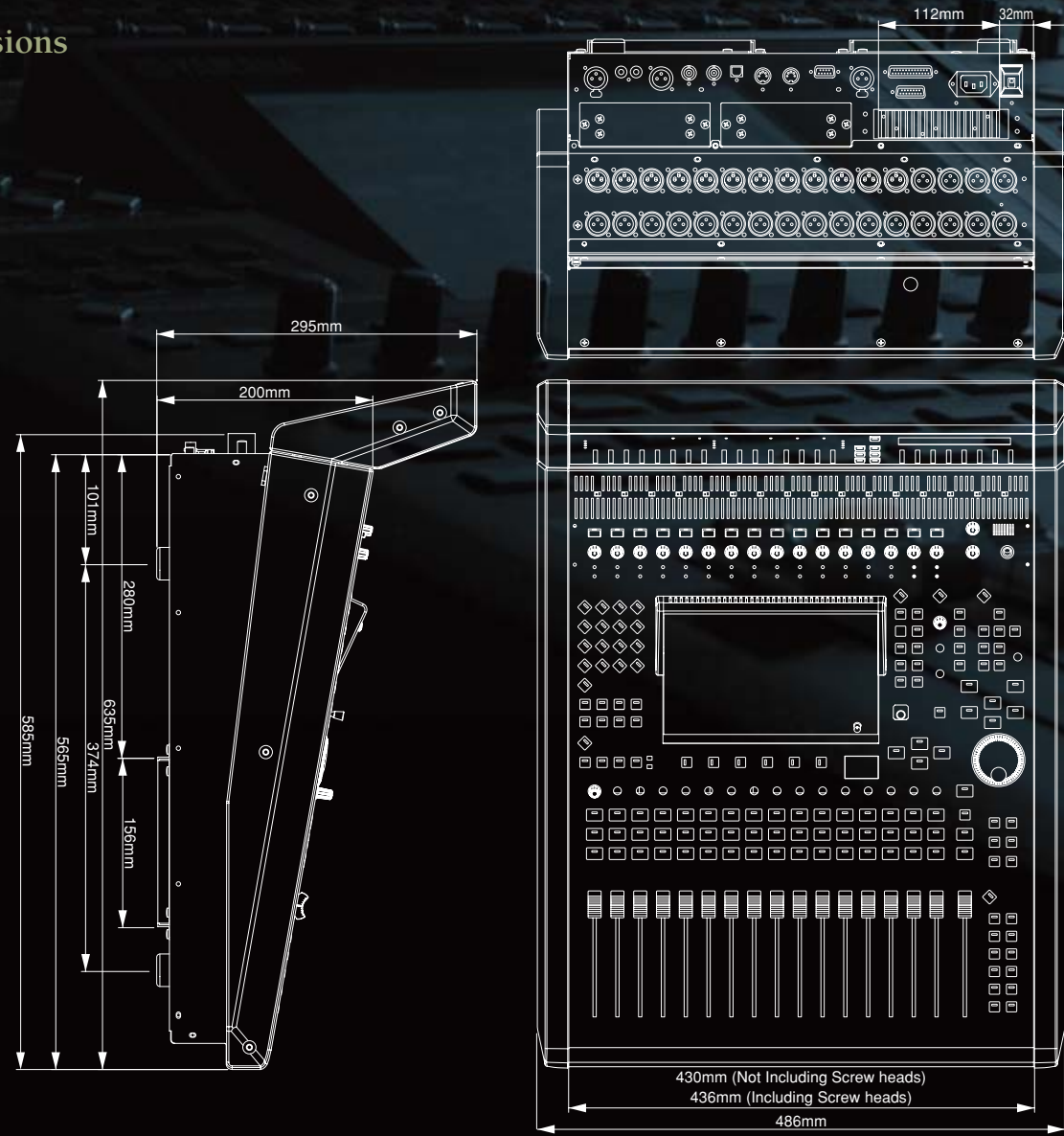
| Terminal | Format | Level | Connector in Console |
|-----------------------|---------|------------|------------------------------|
| TO HOST USB | USB | 0V - 3.3V | B type USB connector |
| MIDI | IN*1 | MIDI | DIN Connector 5P |
| | OUT | MIDI | DIN Connector 5P |
| TIME CODE INPUT SMPTE | Nominal | -10dB/10kΩ | XLR-3-31 type (Balanced)*2 |
| WORD CLOCK | IN | TTL/75Ω | BNC Connector |
| | OUT | - | TTL/75Ω |
| CONTROL | - | - | D-SUB Connector 25P (Female) |
| REMOTE | - | RS422 | D-SUB Connector 9P (Male) |
| METER | - | RS422 | D-SUB Connector 15P (Female) |

*1 MIDI IN can use as TIME CODE IN MTC.
*2 XLR-3-31 type connectors are balanced. (1=GND, 2=HOT, 3=COLD)

The names of programs or menus incorporated in ADD-ON EFFECTS are for descriptive purposes only. Reference to product names, trademarks, artists and songs is made for the sole purpose of identifying products and sounds studied for modeling and describing the sound nuances Yamaha attempted to create through use of its proprietary technology. Such reference does not constitute representations that they physically possess equal qualities, and does not imply any cooperation or endorsement by such manufacturers or artists. The products, trademarks are the property of their respective owners.

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Dimensions



Surround Diagram

