# AW4416 Specifications

## General Specification

| | |
|---|---|
| Frequency Response | 20 Hz - 20kHz (0+1/-3dB, Omni Out) |
| Total Harmonic Distortion | Less than 0.02% (@ 1kHz, Omni Out) |
| Dynamic Range | 104dB (typical) |

## HD Recorder

| | |
|---|---|
| Internal (HDD) | 2.5" IDE. (one unit included in the product package) |
| Internal Tracks | 130 (16 tracks x 8 virtual tracks, STEREO track) |
| Simultaneous Record /Play Tracks | 16-bit mode 8/16, 24-bit mode 8/16, All Rec mode 16 |
| Recording Resolution | 16-bit, 24-bit / 44.1kHz, 48kHz |
| Max. HDD Capacity | 64 GB |
| Max. No. of Songs | 30,000 Songs |
| Max. Capacity of 1 Song | 6.4 GB (12,000 regions) |
| Locate Point (per song) | Quick Locate 8 points (SONG TOP, RTZ, SONG END, A, B, LAST REC IN, LAST REC OUT, ROLL BACK) |
| | Mark 99 |
| Direct Locate | Numeric Keypad |
| Edit | SONG, TRACK, PART, REGION |
| Time Compression /Expansion | 50% - 200% |
| Pitch Change | 1 octaves (Tempo Map related) |

## Mixer Section

| | |
|---|---|
| A/D Conversion Rate | 24-bit • 64 x oversampling |
| D/A Conversion Rate | 24-bit • 128 x oversampling |
| Sampling Rate | Internal 44.1kHz/48kHz, External 44.1kHz-6% - 48kHz+6% |
| Internal Processing | 32-bit |
| SimultaneousMixing Inputs: 44 total | Selected Inputs via Patch Bay 24<br>HD Recorder Playback 16 (stereo x 1 for CD playback)<br>Internal Effects Return 4 (stereo x 2) |
| Busses : 20 total | Group x 8, Aux 8, Stereo, Solo (stereo x 1) |
| Channel Functions | • Attenuation • Pan • 4-band fully parametric EQ • Phase • Dynamics • Insert • Delay • Channel ON/OFF |
| Effect Return Channel | • Attenuation • Pan • 4-band fully parametric EQ • Phase • Insert • Delay • Channel ON/OFF |
| Faders | 17 (60mm motor drive) |
| Memory | Scene memory 96 per song, Patch Library, Channnel Library, EQ Library, Dynamic Library, Effect Library, Automix |
| Internal Multi-Effects | 2 Processors (dedicated to Aux 7/8 busses or insertion to any input channel or stereo buss) |

## Sampling Pad Section

| | |
|---|---|
| Playback | Mono x 8 voices |
| Trigger Pad | 8 x A/B bank |
| Max. Playback Time | Approx. 90-sec. Total (16-bit/44.1kHz) |
| Sequencer Function | 16 tracks |
| Audio File Assign | HD recorder, external input, WAV file |

## CD-RW SECTION

- Playback Audio CD, make Audio CD
- Save backup HDD data/ Load backup data from CD-ROM to HDD
- Read CD-ROM
- Compatible drive unit YAMAHA CRW8824S, etc.

*Visit YAMAHA Pro Audio web site for a list of other compatible drive.*

## Others

| | |
|---|---|
| Undo/Redo | Up to 16 times |
| Metronome function | tempo - mappable |
| MIDI | MTC, MMC, MIDI Program Change, MIDI Clock |
| Word Clock | IN/OUT |
| SCSI | For backup of internal data (Max. 64 GB) |
| Display | 320 x 240 dot backlit LCD, 3-color FL display |
| Power Requirements | 120 V (UL, CSA), 230 V (CE) |
| Power Consumption | 80 W |
| Dimensions | 558 (W) x 460 (D) x 148 (H) mm |
| Weight | 11.8kg (excl. options) |
| Accessory | Removable adaptor for 2.5-inch (ADP25H), 12GB 2.5" Hard Disk Drive (DARA-212000) |

# Inputs & Outputs

## Analog Input

| Terminal | Connector | Nominal level | Input impedance /Maximun input level | Sensivity |
|---|---|---|---|---|
| MIC /LINE INPUT 1,2 | XLR/TRS phone (Balanced), Phantom | +4dB(Line) ~ -46dB(Mic) | 3kΩ/+22dB | •52dB |
| CH 1,2 INSERT IN | TRS Phone (Unbalanced) | 0dB | 10kΩ(600Ω) /— | — |
| MIC /LINE INPUT 3~8 | TRS Phone (Balanced) | +4dB(Line) ~ -46dB(Mic) | 3kΩ/+22dB | •52dB |
| CH8 Input Hi-Z/CH8 | Phone (Unbalanced) | +4dB(Line) ~ -46dB(Mic) | 500kΩ/+20dB | •52dB |

## Analog output

| Terminal | Connector | Nominal level | Output impedance /Maximun output level |
|---|---|---|---|
| STEREO OUT | Phono | -10dBV | 1kΩ/+8dBV |
| MONITOR OUT (L,R) | TRS Phone (Balanced) | +4dB | 150Ω/+22dB |
| OMNI OUT 1~4 | Phone (Unbalanced) | 0dB | 1kΩ/+18dB |
| PHONES | Stereo Phone (Unbalanced) | 100mW +100mW | —/100mW+100mW (40Ω load) |

*0dB=0.775Vrms 0dBV=1Vrms
*Phantom power (+48V) is available on channels 1 and 2.

## Digital Input & Output

| Terminal | Connector | Format/Level | Resolution |
|---|---|---|---|
| OPTION I/O SLOT 1,2 | Mini-YGDAI | Mini-YGDAI | 24bit |
| DIGITAL STEREO IN/OUT | Phono | IEC958 Consumer Use/Professional | 24bit |
| WORD CLOCK IN/OUT | BNC | TTL/75Ω | — |
| MIDI IN,OUT /THRU, MTC OUT | DIN 5pin | — | — |
| TO HOST | Mini DIN8pin | — | — |
| SCSI | D-sub 50pin | — | — |
| MOUSE | D-sub 9pin | — | — |

*Specifications and appearances are subject to change without notice.*

# Rear Panel

*Each Mini-YGDAI card in the photo is an optional product (sold separately).*

**Web Site** http://www.aw4416.com
http://www.yamaha.co.jp/product/proaudio/homeenglish/

# Options

12GB 2.5" Hard Disk Drive **DARA-212000**
*(one unit included in the AW4416 product package)*

Removable 2.5" HDD Adapter **ADP25H**
*(one unit included in the AW4416 product package)*

Foot Switch **FC-5**

## Mini-YGDAI Cards

| | | | |
|---|---|---|---|
| **MY8-AE** AES/EBU Interface | **MY8-AT** ADAT Interface | **MY8-TD** Tascam Interface | **MY8-AD** 8 ch AD Interface (TRS x 8) |
| **MY4-AD** 4 ch AD Interface (XLR x 4) | **MY4-DA** 4 ch DA Interface (XLR x 4) | **MY8-mLAN** m-LAN Interface | **MY8-AD24** 8 ch Analog Input (TRS x 8) |

**APOGEE**

AP8AD 8Channel AD Card
AP8DA 8Channel DA Card
http://www.apogeedigital.com

**WAVES**

Y56K DSP Effect Card
http://www.waves.com
*Y56K requires AW4416 OS version2.

For detail please contact:

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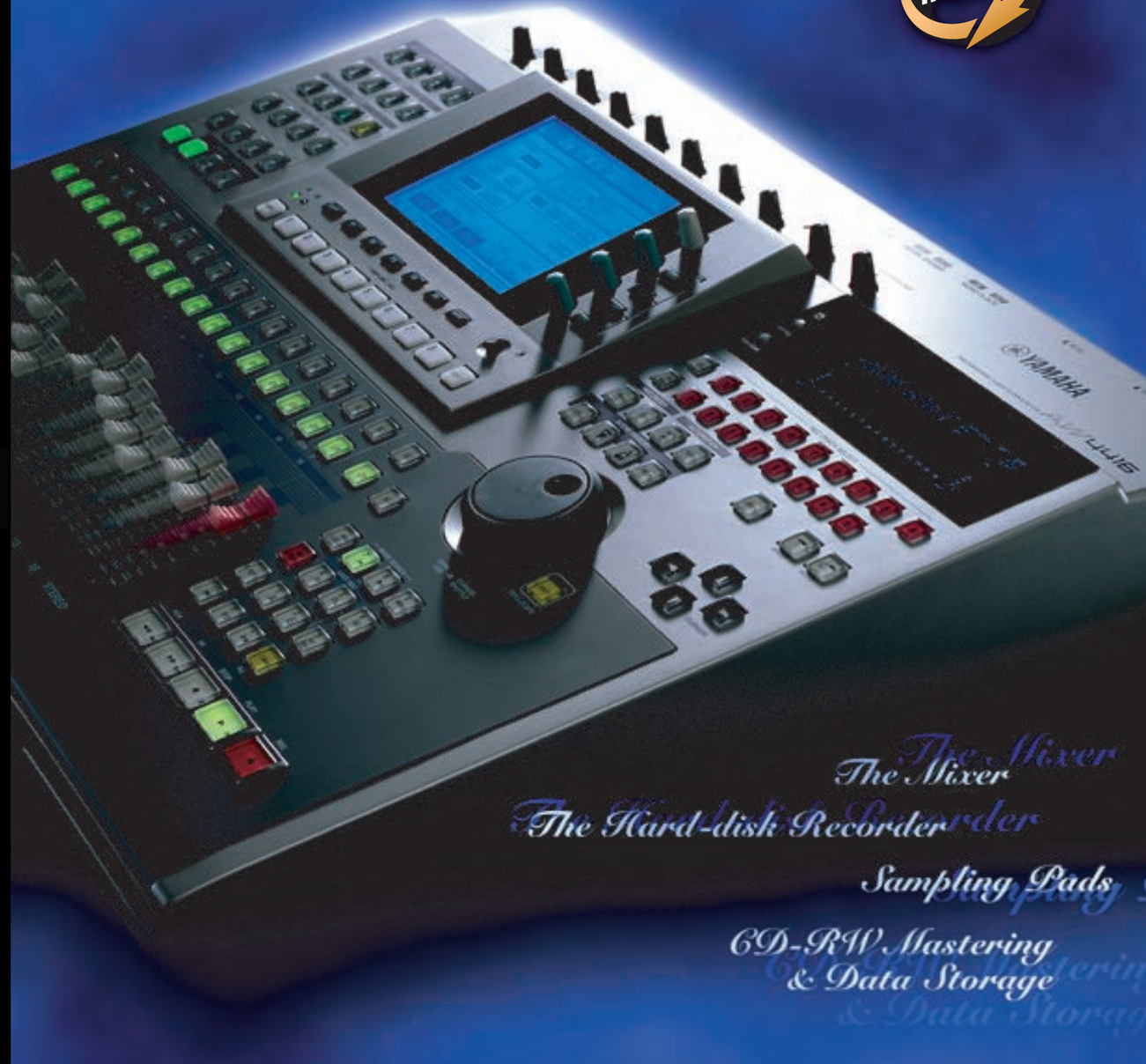
P.O.BOX 1, Hamamatsu Japan

YAMAHA

# AW4416

## PROFESSIONAL AUDIO WORKSTATION

02R inside!

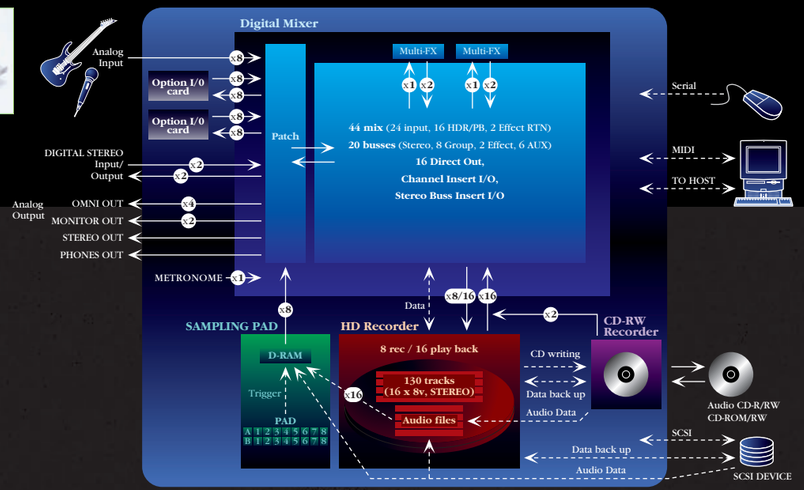


The Mixer
The Hard-disk Recorder
Sampling Pads
CD-RW Mastering & Data Storage

# From Concept to CD with Total Creative Control and Unsurpassed Quality

# 44-Channel All-digital Mixer

Here it is at last. Your digital dream studio in one totally integrated, totally professional unit. With the Yamaha AW4416 Professional Audio Workstation you can record, edit, mix, and master to CD without needing any external equipment other than your microphones and/or line sources and a monitor system (headphones will do in a pinch). Of course, you can easily expand the AW4416 to meet even the grandest production requirements with a range of optional I/O interface cards that provide direct connectivity with all types of digital and analog gear. And, whether you choose to record in 16-bit or 24-bit format, the sound quality you'll achieve is on a par with the finest professional digital recording gear available anywhere. In terms of sound quality, features, operation, and seamless integration, the Yamaha AW4416 Professional Audio Workstation is simply the only choice if you're serious about your recordings.




## The Mixer

- 44 input channels, 20 mix buses.
- Motor faders. And full mix automation.
- Advanced channel functions (inherited from the industry-leading O2R Digital Mixer).
- Two powerful effect processors.

## The Hard-disk Recorder

- 16 or 24-bit recording (uncompressed).
- Up to 130 tracks (16 tracks x 8 virtual tracks + STEREO TRACK).
- Precision editing and location.
- Accepts a wide range of 2.5" IDE hard disk drives — up to 64 gigabytes.

* *To prepare a hard disk drive yourself, use a model in the compatibility list available at YAMAHA Pro Audio web site.*

## Sampling Pads

- 8 sampling pads for real-time playback of samples from hard disk, external audio sources, WAV files on CDs or external SCSI devices.
- 2 pad banks (A and B) for assignment to up to 16 samples.
- 8-note polyphony with up to 90-seconds sample time.

## CD-RW Mastering & Data Storage

- CD-R or CD-RW drive.
- Master your own audio CDs without ever leaving the digital domain.
- Convenient, reliable data storage and retrieval.
- Directly load audio and other data from CD-ROMs.

* *To prepare CD-R/RW drive yourself, use a model in the compatibility list available at web site.*

AW4416
PROFESSIONAL AUDIO WORKSTATION

## O2R Technology & Features Taken to the Next Level

O2R inside!

### A Direct Descendant Of the O2R … Plus Some …

The Yamaha O2R Digital Mixing Console has become the de-facto standard in all areas of sound recording and production. The AW4416 gives you all of the O2R's quality and features — and more — in an integrated audio workstation. Internal processing is 32-bit (except for the EQ stages, which use 44-bit processing) for extraordinary resolution and reproduction realism. And, of course, the very latest refinements in digital audio technology have been added to bring you stunning sonic quality throughout.

### Large-console Input and Output Capability

For it's size the AW4416 offers a surprisingly large complement of input channels and output buses. Out-of-the-box you have 8 analog inputs plus digital stereo inputs. Then, with optional I/O interface cards you can add up to 16 more analog or digital channels. Add the 16 playback channels from the hard-disk recorder, and effect returns, and you have a total of 44 input channels to handle even large recording projects. On the output side you have 8 group buses, 8 auxiliary buses, a stereo bus, and stereo solo bus for a total of 20 outputs which offer plenty of flexibility to handle just about any application.

### Powerful EQ and Dynamics on All Channels

With the exception of the two stereo effect returns, main stereo outputs and the remaining 40 input channels all feature the same powerful 4-band full-parametric equalizer and dynamics processing as the O2R. The effect returns offer 4-band parametric EQ without dynamics processing.

### Full Mix Automation

Faders, pan, EQ and more: the AW4416 offers full automation for precision mix control. 17 x 60-mm motor faders provide an accurate visual level reference, and there's never any need to match "dumb" faders to the actual mix levels. Add scene memories and a number of recallable parameter libraries for automation and convenience that only a state-of-the-art digital workstation can provide.

### Beyond the O2R

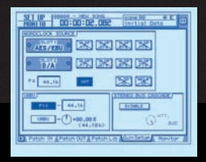
In addition to a number of refinements that you won't see but might hear, the AW4416 features two brand new multi-effect processors offering ambience effects such as reverb and delay, modulation effects including flanging, chorus, pitch change, and rotary-speaker simulation, and even a number of guitar-oriented effects like distortion and an amp simulator (we've even added a hi-Z input specially for guitar). The effects can be used in send/return mode or inserted into any of the input channels and the stereo bus. Furthermore, all AD and DA converters are top-quality 24-bit types for unsurpassed overall sound quality, and a "virtual patchbay" offers unprecedented flexibility in routing mixer inputs and outputs.

## Friendly to Any Audio Format

It seems that the experts can never agree on which format should be the standard for anything. Actually the diversity is healthy, but working with a bunch of equipment with differing formats can be frustrating as well as costly. The AW4416 features an "open system," also inherited from the O2R, which allows it to interface with most analog and digital audio formats via a series of optional interface cards. This system gives you maximum connectivity at minimum cost. Yamaha offers a range of Mini YGDAI* cards that make it easy to configure the AW4416 for optimum integration with any studio.

* *Yamaha General, Digital Audio Interface*

| Format | I/O Card |
|---|---|
| TASCAM | MY8-TD |
| ADAT | MY8-AT |
| AES/EBU | MY8-AE |
| Analog | MY8-AD, MY4-AD, MY4-DA |



## 44 Inputs, 20 Buses

### Ample Input Capacity

If you'll be recording with the AW4416 alone, from mostly analog sources, you probably won't even need any additional interface cards. The AW4416 comes equipped with 8 analog microphone/line inputs. All inputs are balanced with TRS phone plugs, while channels 1 and 2 additionally feature XLR type connectors with switchable phantom power, +48v and insert I/O points for patching in external analog signal processing devices. Channel 8 also features a Hi-Z unbalanced input intended primarily for direct-recording guitar or bass. Digital input capability is provided via a coaxial stereo input. If that's not enough for your recording needs, then you can add up to 16 analog and/or digital inputs via two I/O card slots on the rear panel. You can mix and match I/O cards as required, so you could, for example, add four high quality 24-bit analog inputs via a MY4-AD card in one slot, and 8 channels of ADAT optical digital input via a MY8-AT in the remaining slot. The Sampling Pads which can be used for realtime playback and recording of samples effectively provide another 8 inputs, the dual stereo effect returns are another 4, and the hard-disk recorder section has another 16 inputs. That adds up to 44 inputs with full simultaneous mix capability.

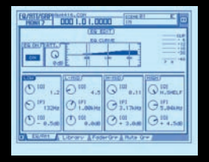
### Impressive Output Capability

Output capability is just as impressive, with 8 group buses, 8 auxiliary buses, a main stereo bus, and a stereo solo bus. In fact, this is the type of bus complement you'd expect on a fairly large console.

# 44-Channel All-digital Mixer

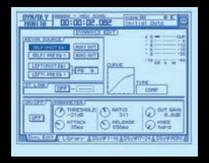
## Precise, Professional Mix Functions

### Equalization



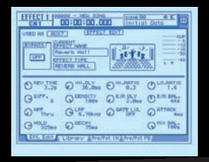
For precise response-shaping control all input channels, the stereo effect returns, and the main stereo bus feature flexible 4-band full-parametric EQ. By "full-parametric" we mean that all four bands are sweepable from 20Hz to 20kHz with 41-point Q adjustment and a ±18dB control range. The low and high bands can also function as shelving type EQ with high-pass or low-pass filters. A fast-response graphic display of the EQ curve is shown on the LCD panel for easy, accurate visual confirmation.

### Dynamics Processing



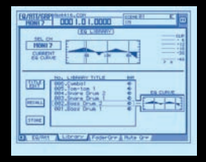
Another feature that offers uncompromising sonic control is versatile dynamics processing on all input channels as well as the main stereo bus. You have a choice of 6 dynamics processing modes per channel: compressor, gate, ducking, expander, compressor /limiter/hard-knee expander, and compressor/limiter/soft-knee expander. Key-in capability and stereo linking are also provided. Everything you need for subtle level correction, noise control, or in-your-face punch is right there … all in the digital domain.

### Effects



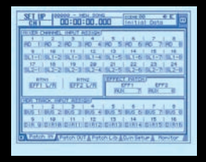
If it's effects you need to polish your sound, the AW4416 has them all. Two top-quality multi-effect processors offer reverb, delay, echo, chorus, flanging, symphonic, phasing, auto-pan, tremolo, pitch change, rotary speaker simulation, and more. There's also distortion and amp simulation for guitarists — plus a Hi-Z input so you can record great-sounding guitar overdubs with only the AW4416 (and your guitar, of course). The effects can be inserted into any of the AW4416 channels.

### Setup Libraries



Operation of the equalizers, dynamics, and effects is made easy and efficient by the inclusion of "libraries" containing setups that can be recalled in an instant. A range of top-quality presets is provided, as are user areas which can be used to store your own settings. Library setups can be assigned as mix automation events, and an "undo" function saves time and frustration when you want to return to a previous setting.

### Internal Digital Patching & Patch Library



Although patch bays and patch cables in general are the key to the versatility of most larger recording systems, they can be confusing and, because signals are routed externally over relatively long distances, they usually compromise the quality of the signal to some degree. The AW4416 features an internal digital patching system which allows inputs and outputs to be assigned as required with ease, with no loss in sound quality. A patch library is also provided so you can quickly recall different patches for different applications.

### Fader Grouping

Faders can be assigned to any of 8 groups, so that moving any fader in the group moves all others by the same amount. This function is ideal for controlling the overall level of specific source/instrument groups, rapidly switching between takes, and other operations that can significantly enhance the efficiency of the recording process.

### Stereo Pairing

Any pair of adjacent faders can be assigned as a stereo pair to comfortably handle stereo sources. In addition to fader level, pairing can be used to link EQ and other channel parameters. The pan parameters of the paired channels can be linked or not, depending on the application.

## Virtual Controls for Direct Pan & EQ Operation

### Intuitive Operation

Years of experience in building high-performance digital consoles for professional applications has given us the know-how we need to give you the controllability you need. Digital gear tends to be complex, so easy access and operation are essential. In time-critical situations such as recording and live sound, the intuitive, efficient control interface provided by the AW4416 lets creativity take the lead.

### Channel View

The Channel View function lets you see all parameters for the selected channel in one display screen. Parameters except for EQ dynamics, and effects can also be directly edited via the Channel View display. There's even a "Channel Library" that lets you store complete channel setups for instant recall: think about how much time you spend setting up a channel to compensate for microphone or pickup coloration, for example, then think about how easy life will be when you can simply recall a channel setup that you've already created.

### Virtual Control Section

The AW4416 features a "Virtual Control Section" and large backlit 320 x 240-dot LCD panel which make centralized operation of the many channels and functions provided quick and easy. Pan and EQ parameters can be directly adjusted via analog-type rotary controls. And the LCD responds instantly when any virtual control is operated, instantly showing the related functions and parameters. But if you prefer the cursor-and-dial approach, that's available, too. The AW4416 lets you work the way you're most comfortable.

### Smooth Motor Fader Operation

In discussing operating feel we can't leave out the AW4416 faders. The 17 x 60-millimeter motor faders provided have been painstakingly designed and manufactured to provide the seemingly contradictory benefits of precision motorized operation, accurate level control, and smooth manual feel.

## Versatile Outputs & Functions

### Digital & Analog Outputs

Both digital (coaxial SPDIF) and analog (phono jack) outputs are provided for the main stereo bus. Assignable analog "OMNI" outputs are also provided for extra output flexibility.

### Stereo Dynamics

Dynamics processing is provided on the main stereo outputs as well as the individual input channels so you can easily apply overall or "mastering" compression to the final stereo mix.

### Flexible Solo Monitoring

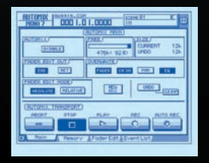
During recording the solo monitor signals are routed to the monitor outputs only, while during mixdown the solo signals are automatically re-routed to the main outputs. You can select pre-fader or post-pan solo monitoring, and in addition to additive soloing a "last solo" mode is provided for single-channel monitoring. A "solo safe" mode is provided for all input channels during mixdown, so you can easily set up "wet monitoring" via the effect returns.

## Time-code Based Full Automation

### MTC or MIDI Clock Automation

In addition to completely self-contained automation of all faders and mix parameters, automation can be synchronized to an external MIDI Time Code source (30, 30-drop, 25, or 24 frames per second) or MIDI clock signal without the need for any extra interfaces or converters. The AW4416 can also generate MIDI Time Code for synchronization with other equipment.

### Absolute & Relative On-line Editing



Full dynamic automation applies to faders, channel on/off switching, pan, and EQ. "Absolute" on-line editing records actual fader movement in real time, while a "relative" mode makes it easy to trim previously recorded fader data. Other convenient automation features include a fader "return time" parameter, and a hold function which prevents the faders from moving until the recorded data does.

### Scene Memory Automation

The AW4416 scene (snapshot) memory also provides versatile automation capability. Individual fader times can be programmed for each scene memory (up to 96 scenes per song), and scenes can be assigned as automation events for automatic recall during mixdown. Offline editing allows precise frame-accurate adjustment of scene memory, EQ, effect, channel library recall, and channel on/off switching. There's even a "Fader Recall Safe" function which allows individual faders to be disengaged from scene recall operations for manual override.

## MIDI and TO HOST Terminals for External Control

MIDI IN, OUT, and THRU connectors and a TO HOST connector allow MIDI control with appropriately-equipped external equipment. MIDI program change numbers can be used to remotely recall AW4416 scene memories. It is also possible to use an external MIDI sequencer to automate scene changes on the AW4416.

## High Performance 24-bit AD/DA On All Analog I/O

All analog inputs on the AW4416 feature high-resolution linear 24-bit 64x oversampling AD converters for accurate signal conversion without the digital "harshness" that is a sign of inferior converters. The analog outputs feature linear 24-bit 8x oversampling DA converters achieving outstanding sound quality and a dynamic range of 104dB on the stereo outputs.

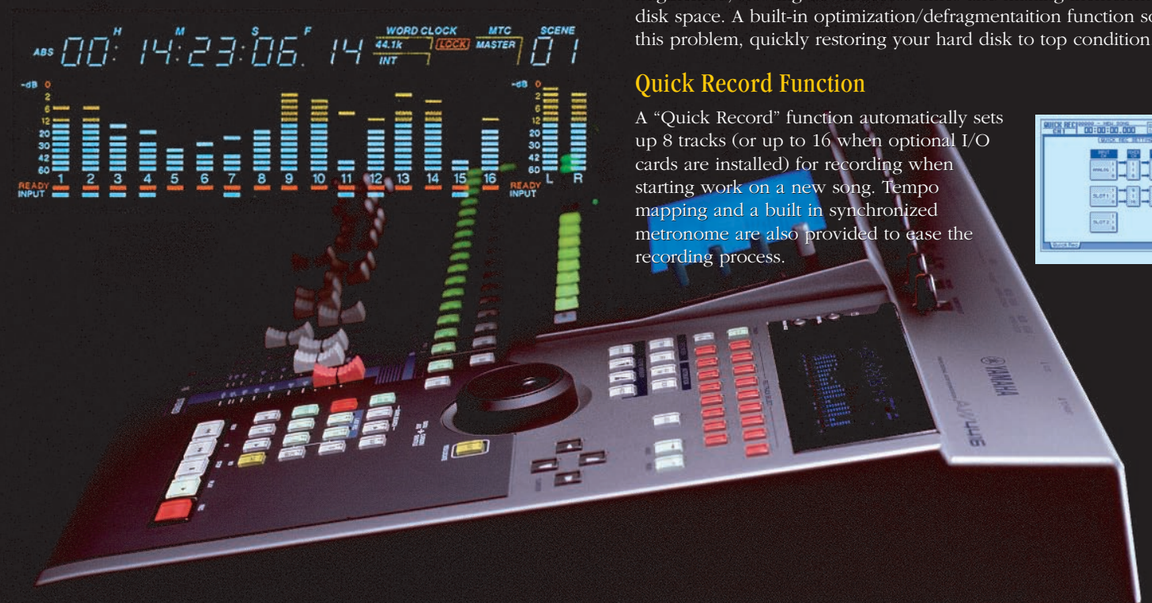
## Up To 64-gigabyte 2.5" IDE Hard Disk Drives

The AW4416 comes with one 12-gigabyte hard disk drive that should be more than enough for most recording needs. If you need more recording capacity, the AW4416 will accept up to 64-gigabyte 2.5" IDE hard-disk drives. With optional HDD adapters you can have two or more drives ready to be conveniently swapped or moved to a different AW4416, essentially functioning as removable media for maximum data portability. A single song can occupy up to 6.4 gigabytes of hard-disk space, and a single disk can hold up to 30,000 songs.

** To prepare a hard disk drive yourself, use a model in the compatibility list available at web site.*

## 16 Tracks x 8 Virtual Tracks, Uncompressed 24-bit Linear Recording

While compression is fine where media space is an issue, there's nothing like uncompressed 24-bit linear recording to reproduce the full impact and nuance of a performance. The choice is yours: choose 16-bit or 24-bit recording at 44.1 or 48 kHz for each individual song. The AW4416 hard-disk recorder provides 16 tracks x 8 virtual tracks for a total of 128 tracks, plus a stereo track which is the ideal place to store a mix prior to mastering it to CD. When recording in 16-bit mode you can simultaneously record up to 8 tracks while playing back 16 tracks, and in the 24-bit mode the maximum number of simultaneous record/play tracks is 16.




## Extensive Editing & Punch-In/Out Capability

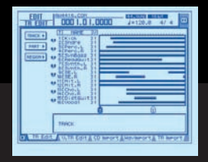
### Non-destructive Edit and Versatile Locate Functions

The AW4416 provides a wealth of editing functions which can be applied to songs, tracks, parts, and regions. Editing is non-destructive with up to 15 undo/redo operations. In addition to copy, move, insert, and delete edit operations, the AW4416 provides 50 — 200% time compression and expansion as well as a two-octave pitch change range. Locating points for editing is no problem, either: you have direct TOP, END, RTZ, A, B, LAST REC IN, LAST REC OUT, and ROLL BACK keys as well as up to 99 assignable locate points per song which can be specified in time or measure numbers.

### Auto Punch-In/Out

Auto punch-in and punch-in points can be precisely set wherever needed, and an optional footswitch (FC5) lets you punch in and out while operating the controls or playing an instrument.

### Song, Track, and Region Naming



For easy identification songs, tracks, and regions can be assigned individual names. Comments can also be saved with each song so you won't forget the details. The AW4416 even has a built-in calendar that makes it easy to record and manage production times dates.

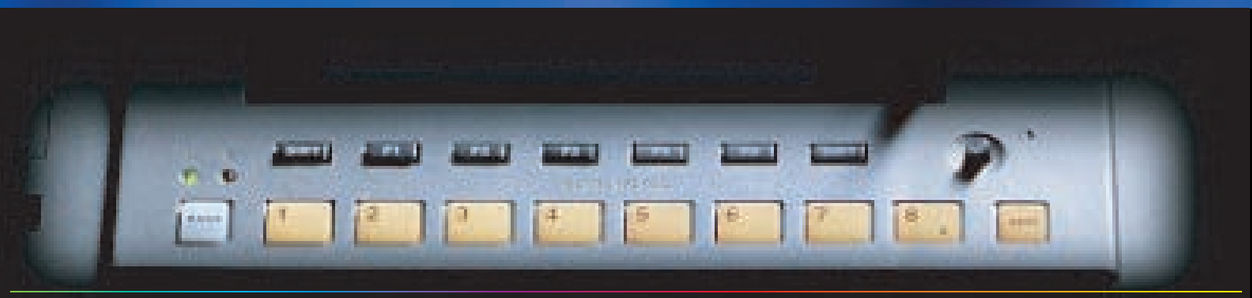
### Disk Optimization & Defragmentation

As work on a project progresses, the data on the disk can become fragmented, slowing down access times and making inefficient use of disk space. A built-in optimization/defragmentaition function solves this problem, quickly restoring your hard disk to top condition.

### Quick Record Function

A "Quick Record" function automatically sets up 8 tracks (or up to 16 when optional I/O cards are installed) for recording when starting work on a new song. Tempo mapping and a built in synchronized metronome are also provided to ease the recording process.

# Sampling Pads



## 16-voice, 8-note Polyphonic Sampling Pads

The AW4416 features 8 Sampling Pads below the LCD panel, switchable in two banks for a total of 16 samples, which can be used to trigger samples in real time during playback or while recording. The samples themselves can be sound files on the internal hard disk, or WAV or CD-DA files from the CD-R/W drive or an external SCSI storage device. The samples can be 16-bit or 24-bit at 44.1 or 48 kHz, with a total of 90 seconds sample playback time for all pads (when using 16-bit/44.1 kHz samples). Up to 8 samples can be played simultaneously. Odd- and even-numbered pads can be assigned as stereo pads for stereo sample playback. Furthermore, the outputs from the Sampling Pads can be assigned to input channels 1 through 24 or returns 1 and 2 via the AW4416 input patching function. Of course, the pads can also be assigned to the hard-disk recorder tracks to allow direct recording of the sampled sounds. Sampling Pad playback can be automated via a "trigger list" which also allows precise editing of playback timing. This feature takes the creative capabilities of the "audio workstation" to a new level.

# Extended

## Internal CD-R or CD-RW Drive (sold separately)

Install an optional SCSI CD-R or CD-RW drive in the bay provided, and you can take an entire project to completion — from laying down the initial tracks to CD mastering — using only the AW4416. In addition to final audio mastering, the CD-R/W drive can be used for reliable, convenient data backup and archival storage. You can also play back audio CDs, and retrieve data from commercial CD-ROMs.

** To prepare a CD-R/RW drive yourself, use a model in the compatibility list available at web site.*

## Easy, Open, Expansion

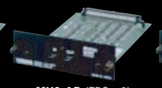
- Easy, intuitive operation via a well-designed control panel with jog/shuttle dials. A 9-pin connector is also provided for mouse connection.
- High-visibility backlit LCD display panel and 3-color fluorescent display for fast, easy parameter and status access.
- Two option I/O slots allow easy installation of optional I/O cards for full compatibility with ADAT, TASCAM, AES/EBU and a range of analog equipment (up to 16 additional channels).
- TO HOST connector allows easy, direct connection to a wide range of computers MIDI synchronization with sequencing software and other applications.
- SCSI-2 connector for easy connection of external SCSI storage devices for data backup and loading.
- Professional WORD CLOCK terminals for precise word-clock sync in a wide range of applications.
- MTC and well as MIDI clock synchronization, plus MMC control capability.

**MY8-AE** (AES-EBU)

**MY8-AT** (ADAT)

**MY8-TD** (TASCAM)

**MY4-AD** (XLR x 4)



**MY8-AD** (TRS x 8)

**MY4-DA** (XLR x 4)

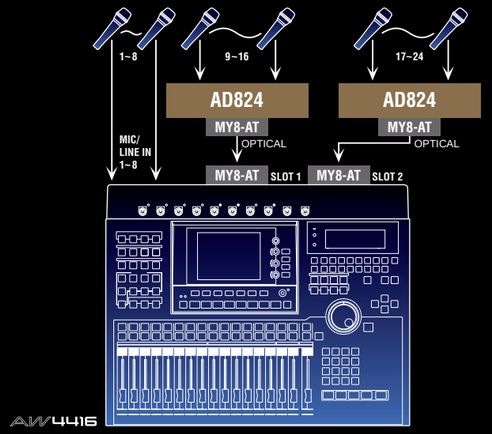
New **MY8-mLAN** (IEEE 1394)

New **MY8-AD24** (TRS x 8)

# Sample Applications

## 1: 24-channel Mic/Line Studio

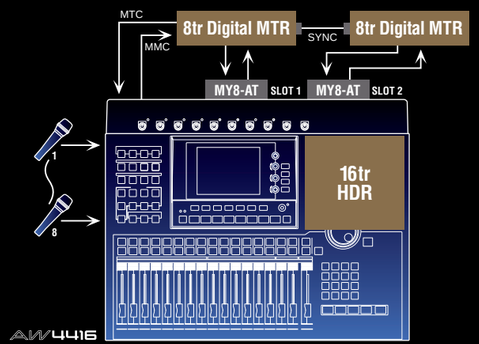
This setup allows simultaneous input of up to 24 analog microphone or line sources. The AW4416's 8 built-in analog inputs are used as-is, while MY8-AT ADAT-type I/O cards interface the AW4416 to two AD824 (8-channel head amplifier/AD converter) units, also equipped with MY8-AT I/O cards.




## 2: 32-track Recording Studio

This system adds two external 8-track digital multitrack recorders to the AW4416's internal 16-track recorder for a total of 32 tracks. The external multitrack recorders are interfaced to the AW4416 via two MY8-AT I/O cards, and synchronization with the AW4416 is maintained via MTC (MIDI Time Code) and MMC (MIDI Machine Control). The external multitrack recorders themselves are synchronized via a local sync cable. Of course, you're not limited to ADAT type external recorders. I/O cards are available for ADAT, TASCAM, and AES/EBU digital formats so you can team the AW4416 up with a wide range of digital multitrack recorders.

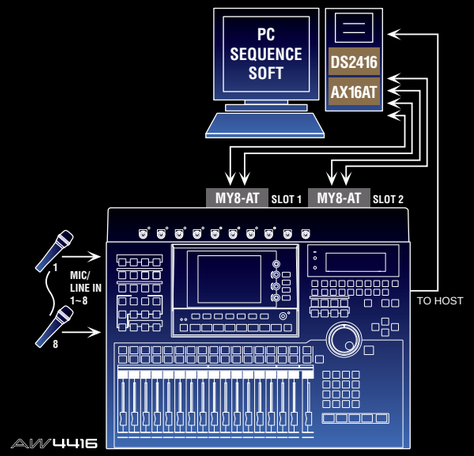
** Total of simultaneously recordable tracks depends on settings on the AW4416 and external multitrack recorders.*




## 3: Computer-based Recording Studio

Here's an example of the AW4416 hooked up to a computer equipped with sequencing software and Yamaha's computer-based 16-track recording system: DSP Factory. This is a true "hybrid" system which combines the advantages of pure computer-based recording and sequencing with the functionality of the AW4416 Professional Audio Workstation. The computer can be used for sequencing and waveform editing — * including waveforms recorded on the AW4416 — and the computer's 16 tracks can be mixed simultaneously with those of the AW4416.

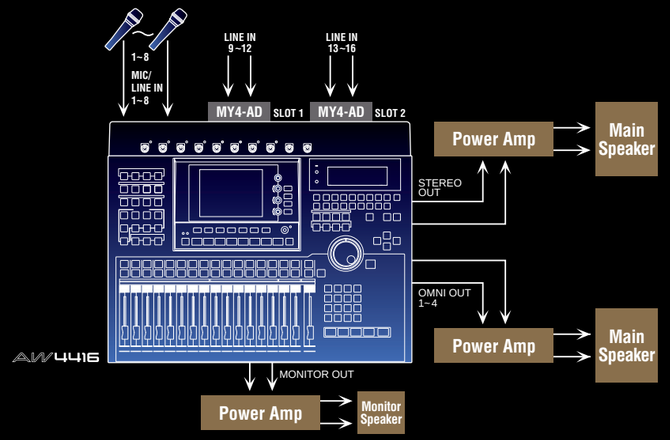
** Operating system versions later than 1.2 will support WAV file export. Export is possible to an external SCSI device, but not directly to a computer.*




## 4: Sound Reinforcement

Yes, the AW4416 can be a powerful sound-reinforcement tool, too. With the built-in analog inputs plus additional inputs provided via optional I/O cards, the AW4416 offers more than enough mixing power and flexibility for even fairly sophisticated sound reinforcement applications. In this example two MY4-AD I/O cards are used to provide 8 addition high-performance line inputs. The AW4416's channel processing and effects processors can make it easy to get the ideal live sound, while the sampling pads let you add live touches in real time. And since the AW4416 is also a recorder, you won't have any trouble getting a great live recording.

** The internal hard disk drive is always necessary if you only use the AW4416 mixing functions.*

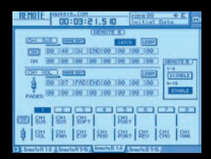


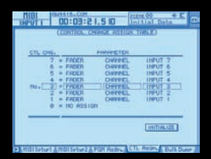
# Version2 Software

## The Best Digital Audio Workstation on the Market Just Got Better.

The AW4416 set new standards for all-in-one digital recording systems when it made its debut less than a year ago. Now, with the arrival of Version 2 software, this award-winning digital audio workstation reinforces its position as a recording tool of choice among professional music producers. Version 2 software adds significant enhancements to the functionality of the AW4416, including full MIDI implementation, refinements to the user interface, and support for new Mini-YGDAI plug-in cards. Best of all, the upgrade is free to all AW4416 users. The AW4416 set new standards for all-in-one digital recording systems when it made its debut less than a year ago. Now, with the arrival of Version 2 software, this award-winning digital audio workstation reinforces its position as a recording tool of choice among professional music producers.
Version 2 software adds significant enhancements to the functionality of the AW4416, including full MIDI implementation, refinements to the user interface, and support for the new Mini-YGDAI plugin system. Best of all, the upgrade is free to all AW4416 users.

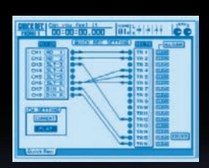
## Full MIDI Implementation Allows Control Over External MIDI Sequencers and Synthesizers





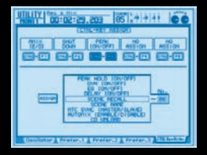
Version 2 software upgrades the AW4416 to full MIDI implementation, allowing it to function not only as a digital recording front end, but also as a remote MIDI controller for synthesizer equipment and the industry's top computer-based recording systems. By assigning MIDI control messages to the AW4416's faders and ON keys, users can have integrated control over the parameters of external MIDI synthesizers (such as filter cutoff) as well as remote fader and transport control of their favorite music production software. Any control changes can be recorded into the AW4416 as auto mix data. Version 2 software also includes Assignable Parameter Change/Bulk Dump and Assignable MIDI Control Change and enables direct recording of MIDI-based instruments. By switching between the AW4416's two channel layers, 32 channels of external MIDI control is possible. The combined audio and MIDI mixing capability of the AW4416 allows control over a total of 76 channels.

## Enhanced Quick Record Function



AW4416 Version 2 software adds the simplified "Quick Record" function found in the AW2816. Quick Record provides intuitive on-screen input routing with virtual patch cables that connect source channels to recording tracks. Once the [REC] + [PLAY] buttons are pressed, a graphical interface guides you step by step through the recording process. Of course, recording with the AW4416's original bus assign routing method is still possible.

## Enhanced Shortcut Key Function for More Efficient Operation



Version 2 software also adds a new "Control Key Assign" function to the Shortcut Key function, allowing the user to assign any frequently used function to an "F" key for convenient customized control over AW4416 operations. Commands can be quickly carried out by pressing one of the F keys (1 through 5) while holding down the Control key (right Shift key), greatly speeding up the user's production workflow.

## Support for New Mini-YGDAI Cards

The Version 2 upgrade adds support for the new Mini-YGDAI plug-in system, making it possible to use DSP cards such as the Y56K DSP card from Waves, Ltd. in addition to various Yamaha I/O cards already supported.

### Waves Y56K DSP Card


Designed especially for the AW4416, this card gives users access to the same award-winning audio processors that, until now, were available only to owners of computer-based recording systems. The Y56K provides six Waves plug-in effects, including the acclaimed L1 Ultramaximizer, Renaissance EQ, Renaissance Compressor, TrueVerb, SuperTap Delay, and DeEsser.

WAVES

** The Waves logo is a trademark of Waves Ltd.*
*For more information about the Y56K, visit www.waves.com.*
** The Version 2 upgrade can be downloaded from the AW4416 website at http://www.AW4416.com.*
** Please visit the AW4416 website for important information about using the Y56K card.*

# Block Diagram