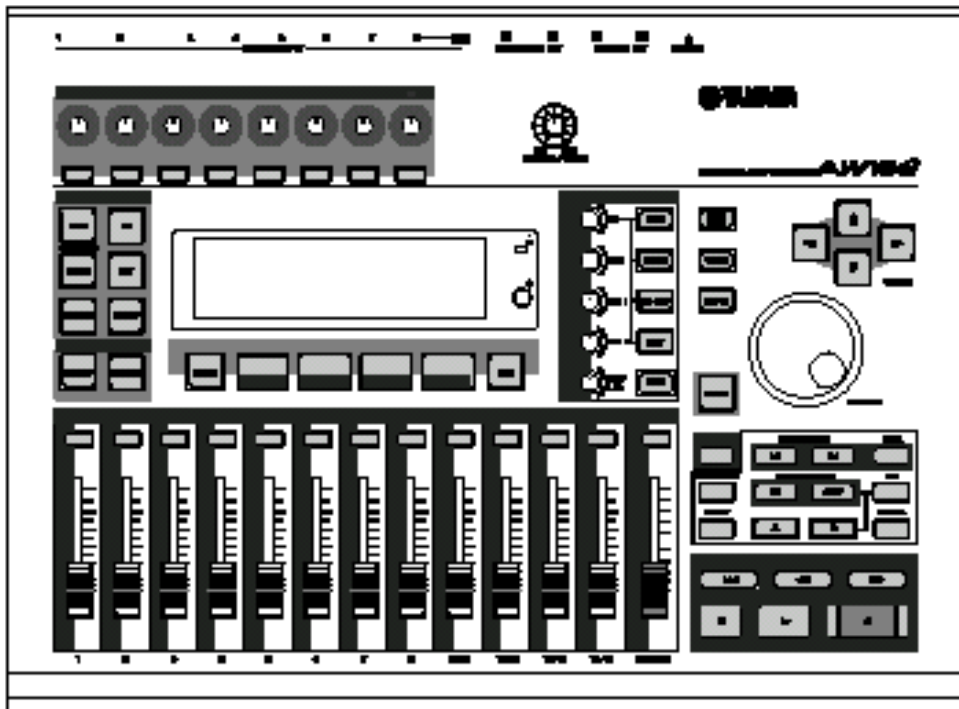




Introducing the AW16G Professional Audio Workstation

By Blake Angelos
Product Specialist, Digital Product Support Group
Yamaha Corporation of America



The Yamaha AW16G is the newest product in Yamaha's family of powerful professional audio workstations. What you get in this product is all of the important features of the AW4416 and AW2816 in a remarkably cost efficient package. The AW16G delivers on the promise of what you would expect from something that claims to be a *Professional* Audio Workstation.

In today's highly competitive digital recording market only truly compelling products make a big splash. Manufacturers are constantly working to create great products that deliver on needed features and still maintain a price point that people can realistically afford. Usually the way it works with digital recording products is the cheaper models force you to make a big sacrifice, be it in audio quality, ease of use, features and what is included in the box. Sometimes you have to go back to the store to get that crucial piece that will make your recorder a complete entity.

This is not the case with the AW16G. This little powerhouse will, right out of the box, gives you essentially all the tools you need to record, mix and master an audio CD. This product delivers on the promise of what a low cost digital audio workstation should be. Consider these specifications:

- **Up to 36 channels at mixdown, including 8 analog inputs, 16 tracks, 2 stereo effect returns, stereo digital I/O, dedicated sampling pad tracks, aux bus 1/2**
- **24-bit AD/DA, 32-bit internal processing—just like AW4416 and 2816.**
- **4 band fully parametric EQ with library—just like AW4416 and 2816.**
- **Two 32-bit effect processors built in—just like AW4416 and 2816 but with some added electric guitar, acoustic guitar bass and vocal input effect algorithms.**
- **Dynamics processing (compressors, limiters, gates, companders expanders, etc.) on virtually every channel—just like AW4416 and 2816.**
- **8-track simultaneous recording/16 track playback.**
- **Same track editing as 4416 and 2816 with the added bonus of exporting all 16 tracks at once.**
- **Sound Clip area for recording quick ideas without burning a track.**
- **A remarkably cool, eminently usable Quick Loop Sampler featuring 4 pads that can be played simultaneously divided into 4 banks (total of 16 samples at your fingertips). In addition to this, a looped sample can utilize the slice feature similar to other Yamaha products (Motif, RS7000, SU700 and SU200) enabling you to sync sample loops to the tempo of the song. Included on the HDR is a library of over 270 megabytes of loops, sound effects and one shots and you can sample via an input channel or lift WAV files right off of an audio CD that is not copyrighted.**
- **CDR/W drive and 20 Gig HD included in the box.**
- **\$1299.00 MSRP represents a price breakthrough for this quality.**

Did I say **\$1299.00 MSRP**? With a **CDR/W included**? And 2 32-bit effect processors **INCLUDED**? And dynamics on EVERY INPUT **INCLUDED**? And 4-band FULLY PARAMETRIC EQ on EVERY INPUT **INCLUDED**? ***ALL INCLUDED IN THE BOX THE DAY IT IS PURCHASED?***

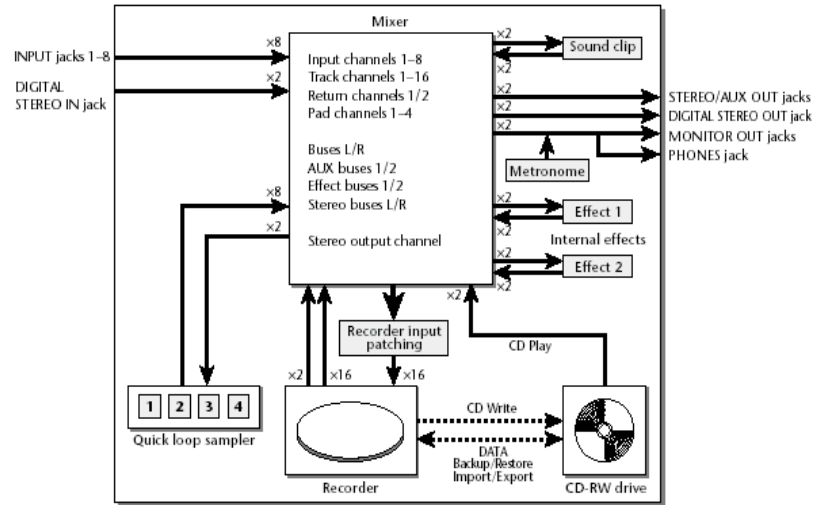
YES!

This short guide will introduce you to the features of the AW16G. In addition, look for several Power Users that will address specific features such as the Input Effect Library, the Quick Loop Sampler and CD Mastering. Also look for guides specific to Motif users of the Motif Studio Music Production System (The AW16G and the Motif as a powerful, all encompassing music production rig).

- AW16G Anatomy

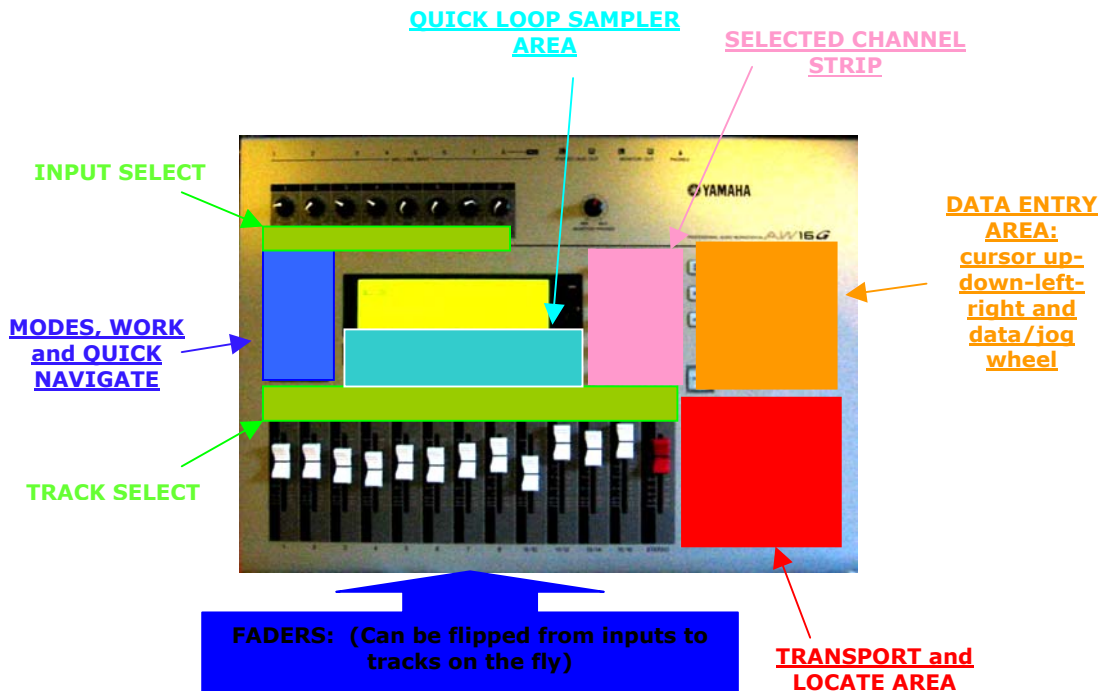
First off, let's start with a brief overview of the AW16G signal flow and front panel. Figure 1 (below) shows the signal flow of the AW16G. This should give you an idea how audio is routed and processed in the machine:

Fig. 1: AW16G Signal Flow Diagram:



Now let's take a look at the front panel of the AW16G. The best way to get a feel for how things work on the machine is to divide it up into several areas where certain tasks are accomplished. Figure 2 below divides the AW16G into different areas:

Fig. 2: Front Panel of AW16G



- Work Navigate, Quick Navigate and Main Modes

Now let's take a look at the Main Modes of the AW16G. These primary modes are conveniently grouped in a the WORK NAVIGATE and QUICK NAVIGATE section of the machine:

Fig. 3: WORK NAVIGATE and QUICK NAVIGATE

Main Modes

SONG: Anything pertaining to loading, saving, importing and overall song settings including tempo, MTC frame rates, etc.

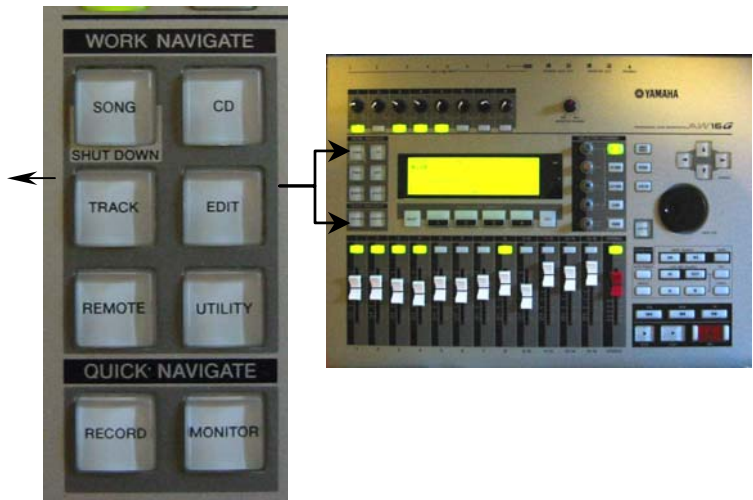
TRACK: Anything pertaining to tracks within songs.

REMOTE: Settings for Remote control of external hardware and software sequencers. Templates for "Apple" Logic®, Cubase®, Protools®, Sonor®, XG, included

CD: CD Write, Play, Back Up, Restore and overall Settings.

EDIT: Track editing, including time compress/expand and track export (all 16: different than 4416 or 2816).

UTILITY: MIDI Settings, bulks, preferences, etc.



To enter a MODE, simply press the desired button. Navigation with each mode is consistent and each screen displays a good amount of information. When a mode is selected, the menu items will always be on the right hand side within the LCD display. Press the [TRACK] button successive times to toggle through each menu item, or hold down the [TRACK] button and use the cursor up/down controls (right-hand side of the machine) to move through up or down. Figure 4 (below) shows the main screen when TRACK mode is selected:

Fig. 4: TRACK Mode Display

Shows [TRACK] Mode:

VIEW: Main Track View

V.TR: Virtual Tracks x 8

PAD: Sample Pad Tracks 1-4

CD IMPORT: Allows User to Import Data from CD/R*

Currently Selected Track/Pad

Time:

Tempo, T.S, Measure/Beat

Menu Items accessed via pressing the [TRACK]

(CD Import allows 16-bit, 44.1 via the CDR/W drive from the AW4416 and AW2816).

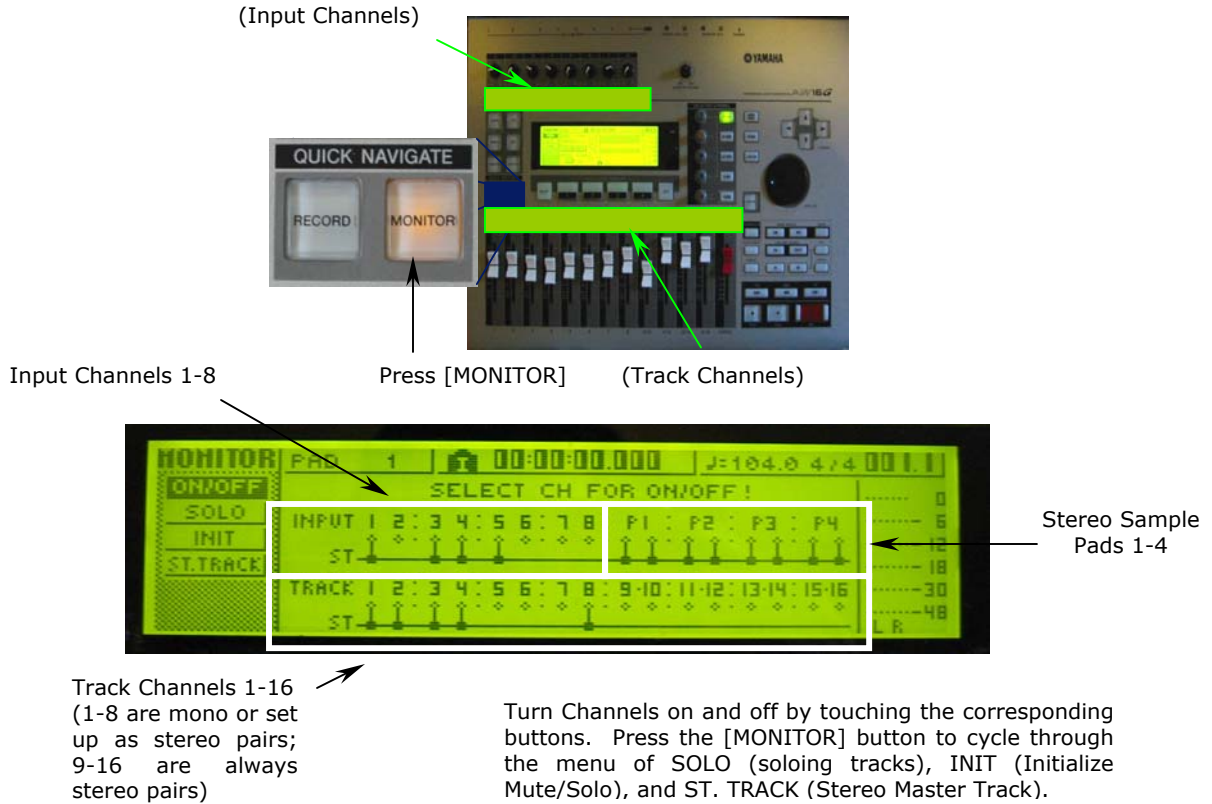
Active Tracks

A Meter is provided in any mode where it is needed and is always going to be on the left side (unless you are viewing overall metering in the via the VIEW mode—last button in the SELECTED CHANNFI

- Input Channels, Track Channels, Monitor and Selected Channel

Press [MONITOR] under Quick Navigate and you get the screen below:

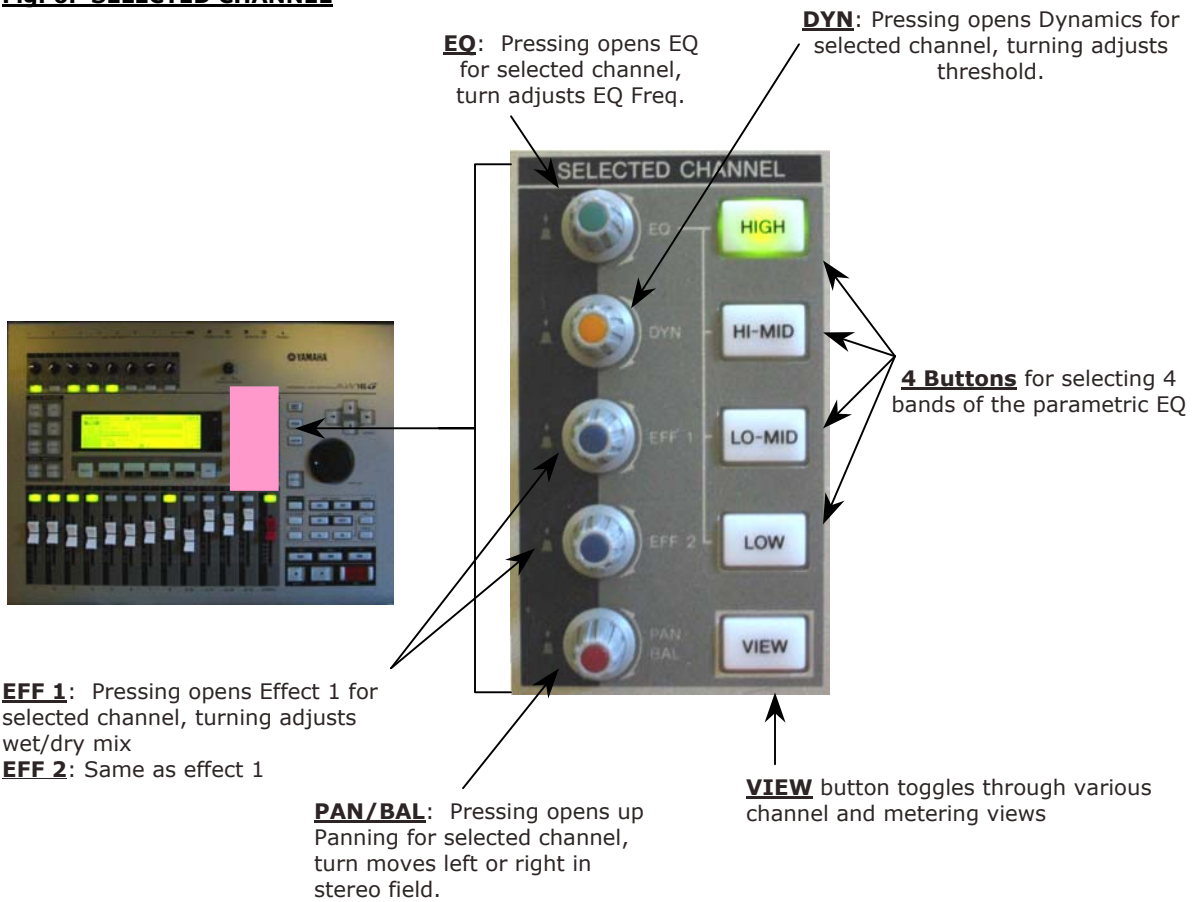
Fig. 5: Monitor Mode Display



You can select Input Channel and Track Channels via the corresponding buttons located directly below the mixer inputs and above track inputs. Touch input channels, track channels or sampling pads to mute or un-mute.

One of the powerful features of the AW16G is what is available to you on each input channel and track. As stated before, each input or track channel has a **4 band fully parametric EQ**, a **dynamics processor** that allows you to apply several different styles of dynamic processing for each selected channel (compression, expansion, companding, gating or ducking) and 2 effect processors—***all with library***. Accessing these effects are easily done with the **SELECTED CHANNEL** strip as seen below in Figure 6. You can view the processing attributes for each input or track channel that you have selected: Simply press the knob that you wish to select and the LCD display will update to what you have selected. In addition to this, the knobs are both ***push and turn*** knobs. Press any channel (input or track), then push any of the 5 knobs. ***Pushing repeatedly*** toggles through menus (libraries, algorithm edits, etc.). ***Pushing and turning*** at the same time allows you to immediately get to the library and select a setting for each function.

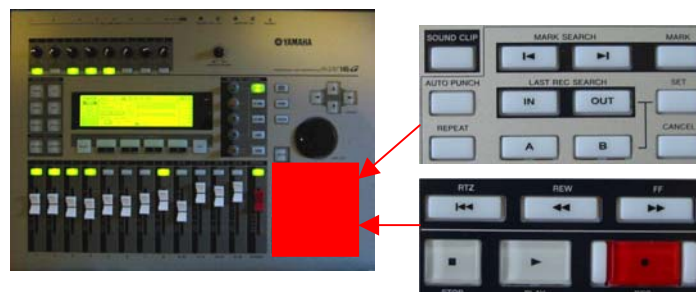
Fig. 6: SELECTED CHANNEL



- Transport and Locate

The Transport and Locate section allow access to standard play, stop, record fast forward, and rewind functions. Above the Transport controls are comprehensive Locate buttons that allow place A and B points and set up to 99 markers. The Auto Punch button engages Auto Punch in Record, and the IN and OUT buttons set where that will occur. Repeat allows you to repeat that section. The Sound Clip button accesses the convenient Sound Clip Function that allows you to record a quick sketch without burning up a track on the recorder.

Fig. 7: Transport and Locate



- **Setting For Recording: Pairing Channels, Routing Channels, Applying EQ, Dynamics And Effects**

The following is a step-by-step process for setting up to record on the AW16G where we will first set up a stereo pair, route the pair to two tracks, then apply EQ, Dynamics and Effects to the two tracks that we routed out input to (rather than the inputs themselves). *GENERALLY* you will not want to record with effect unless you are using something where the effected sound is an integral part of the instruments character and affects the way a player performs, like distorted guitar, chorused acoustic guitar, an electric bass sound through a pre amp and so on.¹

So let's begin by setting up a stereo pair on two Input Channels. This is useful when you are using the AW16G to record a stereo source such as a keyboard or an instrument that you wish to record in stereo with two microphones (such as a piano). In this example we are recording the output from a keyboard and, since most keyboards have 1/4" outputs, we will use Input Channels 3 and 4:

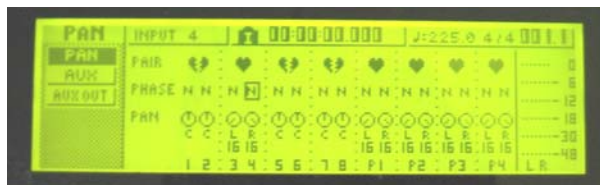
Fig. 8: Pairing and Panning Inputs 3 and 4

Step 1: *Press and hold* input button 3, then button 4.



← This screen will appear, press [ENTER] to confirm.

Step 2: *Press the [PAN]* button on the Selected Channel Strip

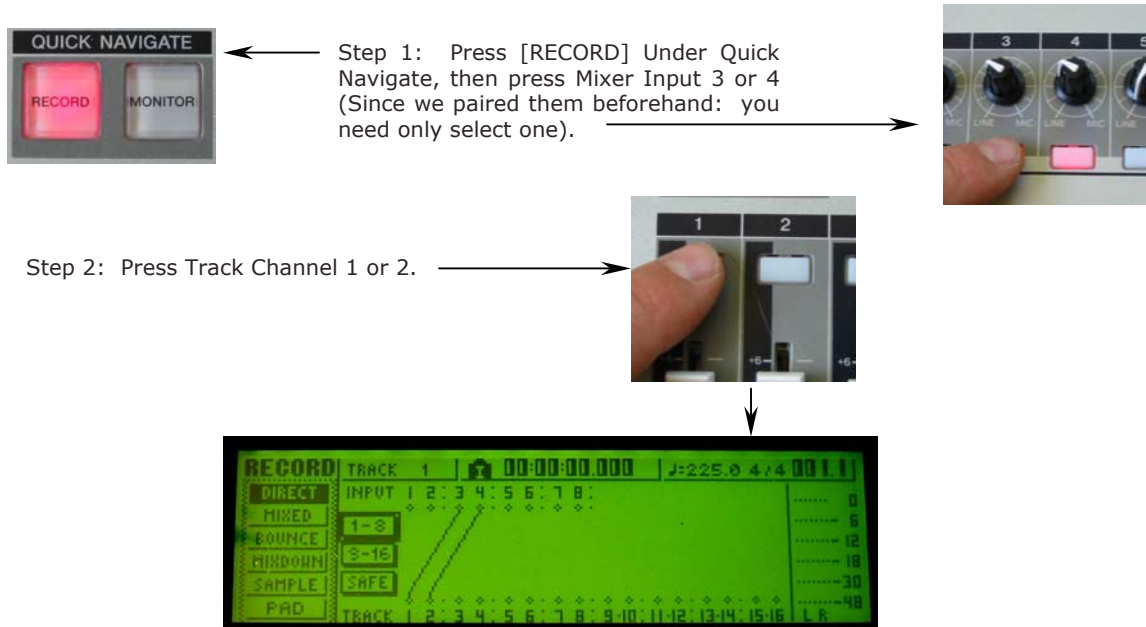


Step 3: This screen will appear. Press input button 3 then turn the pan knob hard **left**, then press input button 4 and turn the pan knob hard **right**. Inputs 3 and 4 are now a stereo pair.

¹These effects can be generated entirely by the AW16G via the input effect section, which will be briefly discussed in this document and is explained in detail in "Power User #1 Using the Input Library on the AW16G for Electric Guitars, Acoustic Guitars, Basses and Vocals".

Now we have a stereo pair. The next step is to route the stereo pair to 2 tracks of the recorder. First of all, pair 1 and 2 and pan them hard left and right as we did before with Input Channels 3 and 4, then follow the steps below:

Fig. 9: Routing Input Channels 3-4 to Track Channels 1-2



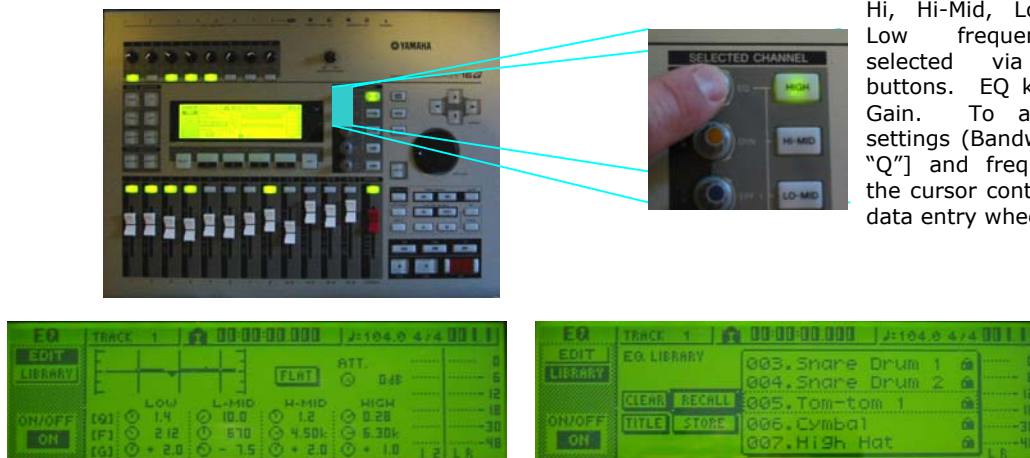
Step 2: Press Track Channel 1 or 2.

LCD Display will show you that Mixer 3-4 is routed to Track 1-2

Now, with tracks one and two selected, let's apply some EQ using the EQ Library:

Fig. 10: Applying EQ to Track Channels 1-2

Under Selected Channel, touch the EQ knob (which functions as a button when pressed).



Hi, Hi-Mid, Low-Mid and Low frequencies are selected via dedicated buttons. EQ knob adjusts Gain. To adjust other settings (Bandwidth [a.k.a. "Q"] and frequency), use the cursor controls and the data entry wheels

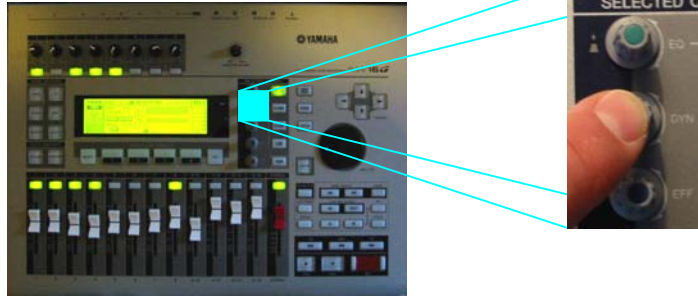
4-band fully parametric EQ

Library settings accessed by *pushing and turning* the knob. Repeatedly pressing the knob moves you through the 2 items in the EQ menu.

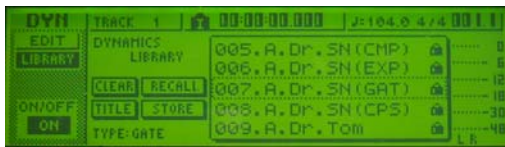
Dynamics Processing is applied in a similar fashion:

Fig. 11: Applying Dynamics Processing to Track Channels 1-2

Press the [DYN] knob under selected channel



Repeatedly pressing the knob allows you to toggle through the 2 items in the dynamics menu.



Dynamics processing is available on EVERY input

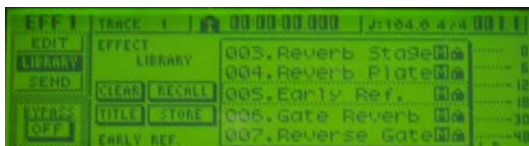
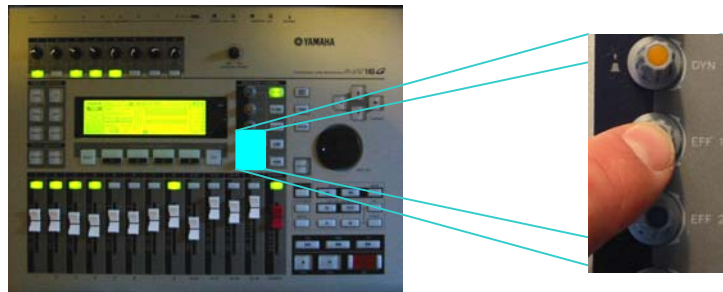


Library accessed and viewed via "push/turn" move.

Lastly, Effects processors 1 and 2 are also accessed in the same way as EQ and Dynamics. To send effect to a track, simply select the track and turn the knob.

Fig. 12: Applying Effects to Track Channels 1-2

Touch the [EFF 1] or [EFF 2] knob to access the affect processors.



Library access via the "push/turn" move. Repeatedly pressing either EFF 1 or EFF 2 knob toggles through the 3 menu items under Effect 1 or Effect 2



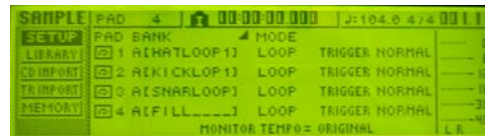
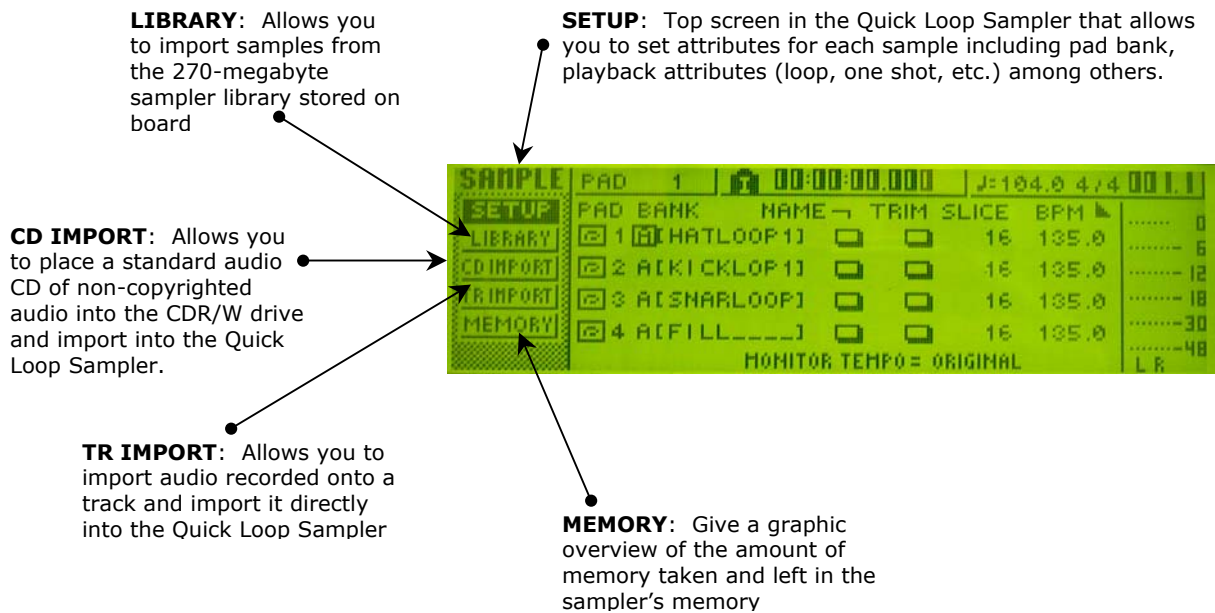
Screen shot of send page

You should now have a fairly good understanding of how the AW16G works and hopefully you are saying to yourself, "Wow. This thing is really easy to operate!" There are a few more bits and pieces to cover in this document that will add to your understanding. One of the coolest additions to the AW16 is the Quick Loop Sampler.

- Quick Loop Sampler

The Quick Loop sampler brings a feature found in several Yamaha sampling products (Motif, RS7000, SU700, SU200) the AW16G. You can load in up to 16 samples into 4 banks (total of 44 seconds at 44.1 kHz stereo). Loops can be sliced into 8, 12 or 16 parts and beat matched to the song tempo. You can sample from an audio source through the audio inputs, lift audio. Directly from a non-copyrighted CD or load in something from the unit's hard drive, which is loaded with about 270 megabytes of wav data for the sampler. **This is a powerful and unique feature.**

Fig. 13: Quick Loop Sampler



(Sampler Screen 2)

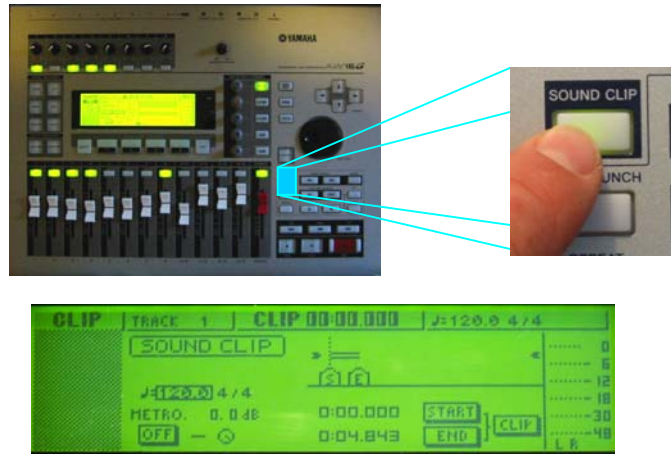


(Sample Wave Edit)

- Sound Clip

The Sound Clip feature allows the user to record a track of audio from any input without using one of the tracks of the recorder. You can use it as a quick sketchpad—simply plug in to any available input, set appropriate levels and go.

Fig. 14: Sound Clip Feature

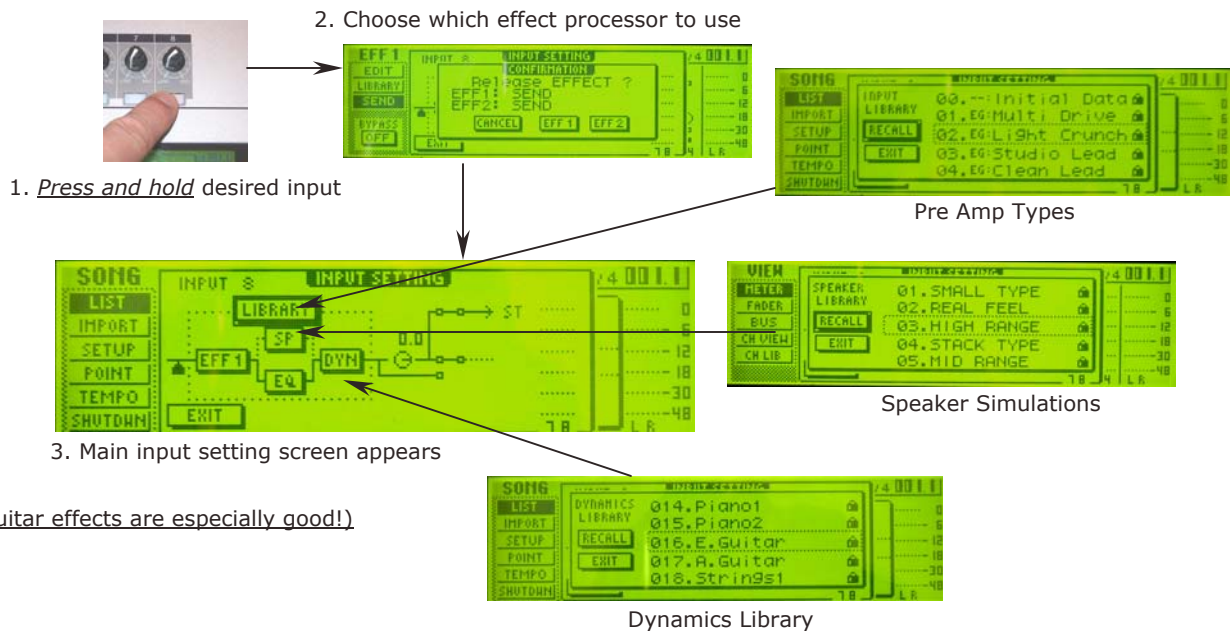


(Screen shot of sound clip mode)

- Input Channel Library

A very powerful feature of the AW16G is the Input Channel effects. Simply *press and hold* an input channel for a few seconds and you can access input effects for pre amplifiers for electric guitar, acoustic guitar and bass, and you can select different speaker simulations, dynamics, and equalization libraries, too. There are even effect settings for vocal inputs.

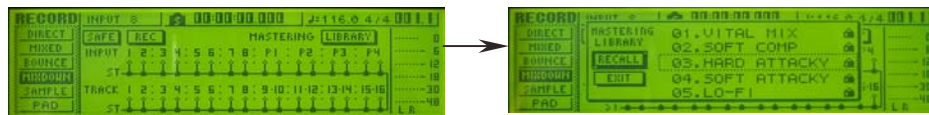
Fig. 15: Input Channel Library



- Mixdown And Mastering

The AW16G is designed to make mixdown fast and easy. To access the Mixdown feature, press the [RECORD] button under QUICK NAVIGATE repeatedly until you have selected MIXDOWN from the menu. Select the inputs and tracks you wish to mixdown to a two-track master, add some dynamics specifically designed for finalizing a mix and **burn a CD!** It is just this simple:

Fig. 16: Mixdown and Mastering



1. Select the tracks and inputs
You wish to mixdown...

2. Select mastering



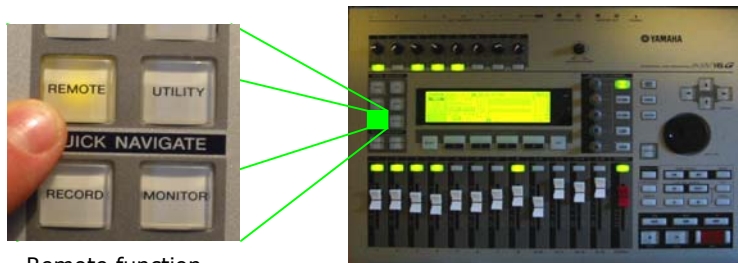
3. Burn A CD!

For more detailed information about Mixdown, check chapter 9 in the manual, "Mixdown and Bounce Operation".

- Remote Functions

The AW16G offers users of leading software sequencers and keyboard workstations yet another bonus: It can function as a remote control surface. Supported software out of the box are Yamaha's own SQ01 Sequencer, Apple Computer Logic (Formerly Emagic), Steinberg Cubase, Cakewalk Sonar, Digidesign ProTools and any hardware sequencer that responds to MIDI control messages. And last but not least, these remote functions make the AW16G an ideal companion to the MOTIF—hence the MOTIF STUDIO: A complete synthesizer/sampler/sequencer and hard disk music studio!

Fig. 17: Remote Functions



Remote function
accessed from
Main Mode area.

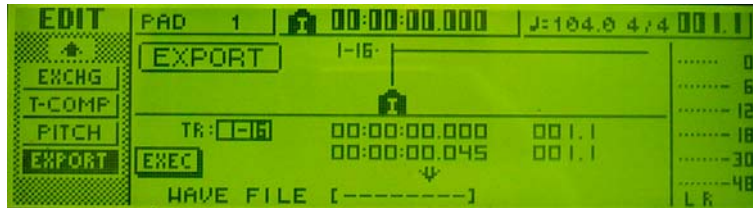


Remote Screen showing different supported
software sequencers

- Miscellaneous Cool Features

Here are just a few more cool features of the AW16G that are worth mentioning:

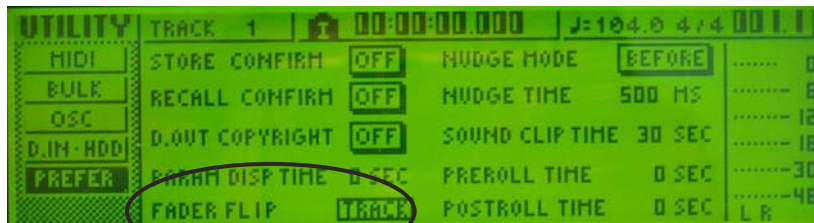
Fig. 18: WAV Export, Scene Library, and Fader Flip



Want to edit or master your project in a software digital audio editor or send your tracks to a top mastering engineer for finalization? The AW16G makes it simple by allowing you to export single tracks, the stereo master track, even 16 tracks at once as .WAV files direct to the CDR-W! This single feature takes the AW16G from a simple digital recorder into a fully *professional* digital audio workstation.



Scene store and recall saves a snapshot of the entire mix picture—levels, pan settings, effects settings, dynamics settings, EQ settings, etc.—and allows you save and recall complex mixes with the touch of a button. This is a feature you may have come to expect from all Yamaha professional digital mixers and recorders and something included with the AW16G.



A Screen shot of the Utility Mode/Preferences. Note "Fader Flip". This allows you to use the AW16G faders to control either tracks or inputs/pads *on the fly* right in the middle of a recording or mixdown session.

- **F.A.Q.**

Q: What do I gain if I step up to the AW4416 or 2816?

A: Two important features are included with the bigger brothers of the AW16G: Comprehensive On-board Automation ("Flying Faders") and a host of expansion options including several forms of digital and analog expansion options (ADAT, TDIF, AES-EBU, etc.). In addition, the WAVES Y56K processing card, a remarkable, high quality effects card from WAVES Corporation, is only available for the 4416 and 2816.

Q: So if I want to automate a mix on the AW16G and there is no automation on board, how do I accomplish that?

A: You have to use a software or hardware sequencer or a keyboard workstation like the Yamaha Motif. Since the AW16G is already set up for remote control it is easy to record fader movements, mutes and other supported controllers and play them back through a MIDI sequencer.

Q: Okay, I see the digital I/O on the back but for some reason I can't seem to figure out how to get it to work? How do I set this up?

A: Is your source transmitting digital signal? Make sure that is happening, then on the AW16G go to the [UTILITY] mode, select "D.IN - HDD" cursor to DISABLE under DIGITAL IN PATCH and enable it to bring your digital signal in on Input 1-2, 3-4, 5-6, 7-8 or the Stereo Bus. If you get the message "Wrong Word Clock" the device that is supposed to transmitting is either not enabled or you may have a bad optical cable.

Q: Does the AW16G accept files from the 4416 and 2816?

A: Yes, as long as the files are in 44.1, 16-bit format.

Q: Does the AW16G have the same audio quality as the 4416 and 2816?

A: The AW16G has the essentially the same DACs as the 4416 and 2816 (24-bit), as well the same effects quality, the same dynamics processing and the same EQ.

Q: Are there any expansion slots?

A: No.

Q: Can I synchronize the AW16G with my Motif Workstation, or with my Cubase Software?

A: Yes. AW16G will synchronize with any MTC compliant device, including MOTIF, RS7000 and virtually all professional sequencing software packages.