

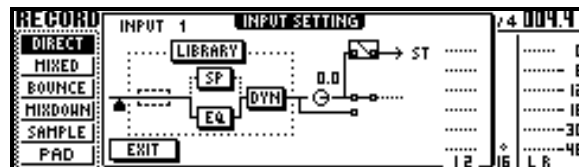
YAMAHA

POWER USER

AW16G
Music Production Studio

INPUT Channel/TRACK Channel Signal Routing: the Basic Concept

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AW16G Sorting out Digital Recording

What are the principal functions that a digital mixer/recorder/burner like the AW16G performs? There is RECORDING. There is OVERDUBBING. There is BOUNCING. There is MIXDOWN. There is CD MASTERING. This can be a very confusing subject for the beginner but you can break it down by tackling the fundamental signal flow. This article will get you started by detailing the signal flow during the Recording process. Gaining an understanding of the different roles of a Channel during the setup for a recording will help the understanding of a Channel in any possible scenario. And that is what it takes to feel comfortable with the unit.

RECORDING: the process of putting INPUTS to TRACKS. We will learn in this article that while you are inputting data to the tracks you can monitor (listen to) the signal separately – even experiment with reverb and other effects with or without recording those effects. Assignment during RECORD can be “DIRECT” or what is called “MIXED”. Direct – you assign an input to a track directly. In MIXED you can combine signals from many inputs onto a pair of tracks via a bus (Bus Recording). Signal is carried (bused) to a pair of tracks.

OVERDUBBING: the process of putting some INPUTS to tracks at the same time monitoring playback of tracks that are previously recorded.

BOUNCING: the process of moving and/or combining previously recorded tracks to other track locations. The AW16G has a special LR bus for this purpose. A bus is a vehicle for carrying signal from one place to another. In this case you select which tracks you will ‘bus’ to a new destination (Bus Recording). This can be used to free up tracks or simply to make control at mixdown easier.

MIXDOWN: the process of creating a ‘final’ stereo mix. This can mean bringing live inputs (8), hard disk Tracks (16), Sampling Pad audio channels (4 stereo channels), 2 stereo effect returns and an assignable stereo Digital input all into the AW16G and creating a stereo mix. The stereo mix is stored into one of eight possible virtual locations – this means you can store 8 different mixes of the song data and choose from among them which will be THE ONE to master. This step was traditionally handled by an off-site 2-track like a DAT or external machine. The AW16G has a special Stereo track for mixdown eliminating the need for external machines.

MASTER: the process of burning finished stereo mixes from your HD to a CD-R or CD-RW disc. The AW16G has a special Library of Mastering effects to make your CD a masterpiece. When you select the MIXDOWN screen under the [RECORD] button you can select the LIBRARY to recall the Mastering presets. These can be tweaked and are applied to the STEREO bus. Select the STEREO channel and use the CH VIEW to see the routing of the Stereo channel. The MASTERING effects configure the Stereo channel’s 4-band EQ and the Dynamics processor on the overall Stereo out.

What you monitor at any given time will depend on what you are doing. During the RECORD process, for example, you may be recording optimum level on each input, but you monitor a separate, more musically balanced mixed. During the MIXDOWN process, however, the stereo mix you listen to is the business end – it is what becomes the final mix.

To get started understanding all of this let’s start with the RECORDING process and see how signal flows through the AW16G in this initial fundamental function.

Signal Flow

Knowing *how* the signal travels through the mixer/recorder will help you sort out what you are seeing and hearing (or sometimes ‘seeing’ but not hearing). Once you step through this guide and relate the screens that you see in the AW16G to the SIGNAL FLOW Chart you will have a stronger understanding of the recording process and will be well on your way to mastering the AW16G as a creative tool. An audio channel is a series of devices that the signal will traverse on its way through console. In the AW16G a **channel** consists of several devices: both the input jack and the mic/line gain/trim are in the analog domain, the AD converter (a high resolution 24-bit Delta/Sigma converter), an attenuator, a phase reverse, an insertion point for an effect processor, a 4-band EQ, a configurable dynamics processor, a pre-fader send, a fader, a post-fader send, a panorama potentiometer (pan pot), and then an output. And at various points along the way you will find metering positions so that you can determine the level of the signal as it passes through each device. A Meter will appear after each device that could apply a change to the signal level. You can select the metering position either PRE or POST a device so that the bar graph will reflect the level at different points along the signal path.

The Signal Path for Recording/Monitoring

A channel carries either **INPUT** (signal from one of the inputs on the back panel) towards the output **or** it carries signal from a **TRACK** (on the hard disk) to the output. Understanding this difference is the first step toward mastering any recording mixer. When you set up to **record** you route signal from the input on the back panel through a mixer channel (called the INPUT channel) to the hard disk recorder (HD). And then, in order to monitor (listen to) it, you route the signal from the hard disk recorder track through another mixer channel (called the TRACK channel) and on to the stereo bus. Ultimately, the Stereo (monitor) output signal will be routed to your studio monitors (speakers). This is the complete trip for an audio signal in a situation where you, as engineer, are setting up to record signal **and** monitor (a separate mix) when necessary. With this signal path and a selector that let's you listen to either the direct signal as it goes to the recorder or the signal post the recorder, you can decide which you need to monitor at any particular time.

Why would you want to listen to anything other than exactly what is being recorded? If you are asking yourself this question then welcome to the world of multi-tracking. When you multi-track you are recording maybe one or two instruments at a time and are building the entire song in segments. You may not want to commit to anything as severe as effect processing until you can hear it in the context of all the instruments. By monitoring the signal *post* the recorder you can try out EQ, effects, etc. without committing them to your recording.

The signal that you typically listen to (monitor) is *post* the recorder.

Input → Input channel → **HD REC Track** → Track channel → **Stereo output** → monitor speaker system.

In this routing above we would consider the INPUT CHANNEL as "pre" the recorder and the TRACK CHANNEL as "post" the recorder. It will always be true that any changes you make to the TRACK Channel's devices during the record process will not be documented in the recorded data – this means you can monitor with reverb, you can try out EQ, effects, etc., as long as you make those changes on the TRACK CHANNEL, not the INPUT CHANNEL. You can strike a mixing balance that is comfortable to listen to (a subjective mix) without disturbing the data as it is recorded (the 'scientific' mix).

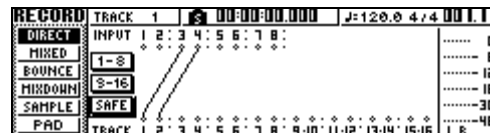
The routing in the AW16G is so flexible you can, if you choose, monitor the actual record signal from any of the input channels, at anytime> this allows you to troubleshoot and to compare (A/B) between what you are actually recording and what you are monitoring (trying out). We will have more on this feature in just a minute.

Let's Route some Signal

Let's follow some actual signal through this signal path from the INPUT to the RECORDER. For the sake of following the signal through the path please pull down all the Channel Faders except for the STEREO fader. Set the Stereo Fader to its nominal position 0dB. Plug the outputs of the Motif synthesizer (STEREO L&R) to the AW16G Inputs #3 and 4.

- You can PAIR a set of AW16G inputs for stereo operation by holding down the INPUT 3 and INPUT 4 buttons simultaneously.¹
- You can PAIR a set of target TRACKS in the same fashion.² Let's assign the Motif to tracks 1 and 2. You could choose **any** odd/even pair of tracks. PAIR the TRACK buttons by holding down the TRACK 1 and TRACK 2 Select buttons simultaneously.³

To assign the paired inputs to the paired destination tracks, press the [RECORD] button on the left side of the machine to select the "DIRECT" screen. All the INPUT and TRACK select buttons will flash RED. Touch INPUT [3] and then touch the TRACK [1] button to connect the INPUTS to the TRACKS. This will assign inputs 3&4 to track 1&2, respectively. This is easy and highly graphic.



Right now you have done enough to start recording! That's right, you have connected the audio input to the tracks of the hard disk recorder. However, you may not hear anything yet. Remember it is not necessary for anyone to listen (monitor) any recording process. Think about it...when you have a simple handheld cassette tape recorder, you press the record and play buttons simultaneously and you *trust* it is recording. You may even get a flashing indicator, but there is no monitoring facility. The point I'm

¹ The 8 INPUT select buttons are located **above** the AW16G screen.

² The 9/10, 11/12, 13/14, & 15/16 tracks are paired.

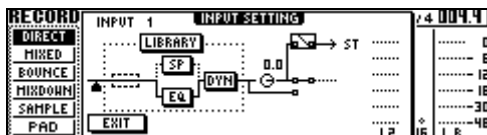
³ The TRACK select buttons are located **below** the AW16G screen.

making is you have routed input to a track on the recorder and you *could* record at this point. Obviously, we want to hear what is going on. But not just yet...⁴

We have LEVEL (which can be recorded) but we have no VOLUME (volume can be perceived). You can see the Level moving your input Meter but you don't hear anything. This is because the routing of the signal has not been completed – we are only half way. Next we will route the signal after it passes **through** the electronics of the recorder, through another set of devices before it goes to the output – this will allow us to strike a separate mix from what is recorded. Before we proceed to the 'Track' channel. Let's learn about a bit more about the INPUT SETTINGS.

INPUT SETTINGS

Press and hold the INPUT 3 button for 3 seconds. It will call up the INPUT SETTING **pop-up screen**.⁵ Reading from left to right you will see what looks like a small upside down Baseball Home Plate. This denotes a place for you to view the METER function. Here you are testing the signal that is adjusted by the MIC GAIN/TRIM⁶ associated with the INPUT. If you set the METER here and it CLIPS – the signal will be distorted from this point on. Turning down the FADER will not cure an input overload problem. This is why it is usually never the FADER that determines whether a sound distorts – it usually happens here at the input stage.



Next inside a special LIBRARY section (large dotted line) you have the special INPUT Preset Selections. The small dotted box signifies a place to INSERT one of the two available Effect processors. If you place your cursor on the LIBRARY box or the small dotted box and press ENTER it will ask you if you want to release EFF1 or EFF2 from their current duties and reapply

⁴ Of course, we could route the signal both to a track and to the stereo bus – this would let you hear exactly what you are recording on each input. We will learn about this option in a minute.

⁵ The POP-UP nature of this screen is important to note. The buttons and functions underneath this pop-up screen will still be active without leaving this pop-up.

⁶ The MIC Gain/Trim is the last control in the analog world and is used to prepare the signal for the input channel. If you distort the input you can damage the electronics so learn to work this function.

them here. This is how you reallocate the EFF processors – the pop-up box will identify where they are currently assigned. When you release one of them they will be used here on this INPUT (until you need them somewhere else – it is like patching it in.)

The SP box is a special Guitar Amp Speaker Simulator – based on Yamaha's Physical Modeling technology (developed during the making of VL technology). There is a 4-band parametric EQ and a configurable Dynamics Processor. Next you have a SEND (direct out)⁷. The rotary control represents the INPUT channel FADER (notice it is set to nominal 0.0dB) – means the normal operating position during a recording. After the fader you will see a path to the STEREO Bus (going up to 'ST') and a path straight on to the TR (track) assignment we made a minute ago (TR 1). Let's break these options down.

INSERT EFFECT point:

If you assign an EFFECT to this input channel you are inserting it '**in-line**'. This will mean that the entire signal will run through this effect. You will need to set a balance between the "wet" (effect) and "dry" signal by editing the effect itself. If you released EFF1 for this purpose you can call up the Edit parameters by pressing the EFF1 knob in the SELECTED CHANNEL KNOB area to the right of the screen. You can un-assign or 'release' an Insert effect by pressing the EFF Knob to see the SEND assignment screen, highlight it (it will appear as a darkened box when active –INS- and then pressing [ENTER].

LIBRARY:

In the Input Channel Library are some 40 different tried-and-true preset setups for Electric Guitar (25), Acoustic Guitar (5), Bass (5) and Vocals (5). If you highlight this box and press enter you can select from these different setups. What they do is combine and program 4 devices; the Effect Processor, the Speaker Simulator, the 4-band EQ and the Dynamics Processor together. If you choose not to use this Library you can set them up yourself, manually. The AW16G's Library function is a powerful tool that will help the beginner get in the ballpark. From these setups you can tweak, as necessary, any and all of the 4 components. They are extremely useful. They get you within a tweak of perfection – plus they are great to learn from! But feel free to recall them and then tweak to your personal taste. That is what it is all about. However, always mind your levels when you have decided to record the

⁷ This gives you an option to route signal to the auxiliary output for other possible uses (headphone mixes, etc).

effects. The INPUT SETTINGS Library is a combination of all these different components together.

- EFFECT1 or EFFECT2:

If you select the LIBRARY for the INPUT SETTINGS, the unit will ask you would you like to release EFF1 or EFF2. If you say select one of them and say OK you will be releasing the EFFECT processor from its previous duties and applying it here.

- SP Speaker Simulator:

Small Type: Single 12-inch open back guitar amp, i.e., Mesa Boogie type.

Real Feel: Creates amp realism by adding grit to picked attacks. This is an excellent modeling function.

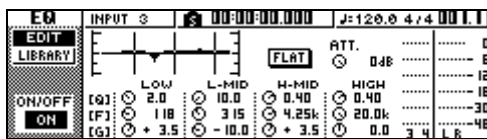
High Range: Cabinet with boosted high frequency content

Stack Type: Classic 4-12" cabinet, i.e., Marshall stack type.

Mid Range: Simulation of cabinet with distinctive mid-range characteristics.

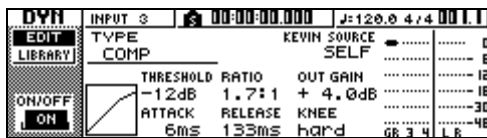
- EQ:

The 4-band parametric EQ> the significance of the EQ at this point in the chain is that it **will be** recorded to the hard disk. Any change you make on the INPUT portion of the CHANNEL will be printed to the hard disk and recorded.



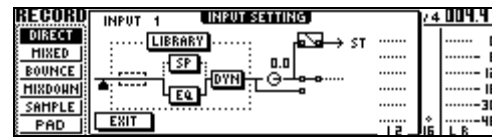
- DYN:

The Dynamics processor can be configured as a Compressor, a Limiter, a Gate, an Expander, a Compander, or a Ducker. Basically a Dynamics processor helps you automatically control the level - dynamic range of incoming signal.



It is like a set of magic hands that, when setup properly, can react quickly enough to incoming signal to make a meaningful change. For example, Compressors and Limiters control how loud a signal can get – allowing you to get maximum record level without overload. A Gate and Expander control the background noise – allowing you to keep the signal you want far from any background noise or unwanted signal. In general,

when you have these professional “leveling amps”⁸ on the job, they can make recording and getting excellent level a breeze. If a single device can be said to be the difference between “home” recording and professional recording, at the top of the list would be Dynamic Processors. They allow you to maximize record level – you are not fast enough as a human being to react when a signal is shooting to the red overload zone. A compressor can be artfully set so that it automatically “pulls” signal back preventing it from overloading or clipping on your recording. Since you have dynamics on every channel you need not worry about should you use it now or later. These devices are used to control unruly signals and keep noise from getting into your recorded signal. Next you have an opportunity to send the signal away before it goes to the FADER (pre-fader). This particular Send point can be used to route signal from the INPUT to a track without going through the Input channel Fader (pre-fader).



FADER:

The Fader during Input record acts like a valve on a pipe. It is set to the 0.0dB position (valve open) and it allows signal to flow through on to the recorder. You would only move the INPUT FADER while recording for very special occasions. For example, if you actually need to fade a sound in or out during a recording session. In most multi-track situations once you have optimized the record level with the MIC/LINE GAIN TRIM control, the level is NEVER adjusted *during* the actual recording processes. Even most fade-ins and fade-outs and are done *later* at mixdown. The INPUT fader *usually* is asked only to pass signal without boosting or cutting the level. When you have leveling amps (dynamics processors) there is no need to try and “ride the faders”. As a human you are not quick enough to react - by the time you notice something is going to overload and react – it has overloaded. In our example, Input 3 is being sent to TR1 REC.

STEREO OUT: (ST)

You can route the Input signal to the STEREO OUT. This will let you hear it via the Stereo bus. When you need to troubleshoot the incoming

⁸ Leveling amplifiers is a great term when describing what a Dynamics Process is all about. They help you automatically contain the signal level.

signal, adjust its level, etc., you could connect this 'ST' point. You would also use this STEREO OUT connection when you want to compare the signal to your Track Channel sound. When you connect this to the Stereo Out, you are hearing *exactly* what is being sent to the HD Recorder. This is where you check EXACTLY the sound that is being recorded – it is your 'scientific' signal. For now, leave this set disconnected (switch open). This connection to the stereo output would also be used when you were using the AW16G strictly as a sound reinforcement mixer and not as a recorder⁹. For our exercise, we will NOT connect to the STEREO here at this point, (leave the switch OPEN) but will follow the signal through to the RECORDER (REC) output to track 1. Then we will take the signal from the track 1 and run it through "Track" channel 1 – this will allow us to setup a separate 'monitor mix' POST the recorder. This very fundamental difference is huge. Stop and digest this point. Anything we do to track channel 1 is post the recorder and therefore part of the 'subjective' mix.

A mixer used strictly as a sound reinforcement front-of-house mixer does not necessarily need the TRACK CHANNEL (post recorder channel) routing.¹⁰ For simple sound reinforcement purposes just route the signal through **one** set of channel devices to this stereo output and set the "Preference" FADER FLIP to INPUT. But in the tracking (record) process, you route signal *post* the recorder through the Track Channel before going to the stereo outputs and the "Preference" for FADER FLIP will be TRACK. The assignment of the faders can be changed to accommodate the selected function. The Fader Flip parameter is found on the "Prefer" screen under the [UTILITY] button. By having this selection you can use the AW16G in many different mixing scenarios.

When setting up to "RECORD **and** MONITOR", the STEREO connection on the INPUT SETTING screen should be broken (disconnected) because it will duplicate the routing *post* the HD Recorder. We will be running through the electronics of the HD Recorder. The TRACK CHANNEL sliders are

⁹ In a scenario where you were not recording but need to use the AW16G mixer like a sound reinforcement mixer, you will want to change the functions of the faders. In a sound reinforcement setup, go to UTILITY and set the FADER FLIP to INPUT.

¹⁰ Although you could use it to setup a separate floor monitor mix...the **INPUT → STEREO** out becomes the house mix, and the **INPUT→HD→TRACK CH→Stereo** out becomes the band's separate monitor mix. (You can give the guitar player MORE GUITAR without affecting the front-of-house mix.)

available to control the separate monitor mix without disturbing the levels going to the recorder.

Here are your two main scenarios:

- You hear actual Recorded levels: When you want to check on the recording. This routing works like a sound reinforcement/Live music mixer, you want the positions of the faders (as Input Channels) to be the 'scientific' output (the business mix). Short route:

Input → Input Channel → Stereo Output

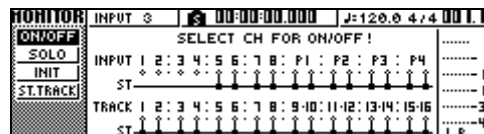
Set the Fader Flip preference to INPUT. The Faders control incoming signal.

- You hear 'relative' monitor levels: Like in a tracking scenario where you want to use the faders (as Track Channels) to setup a separate monitor mix that is comfortable to listen to in the control room. A post recorder scenario lets you setup monitor mixes and separate headphone mixes post the recorder:

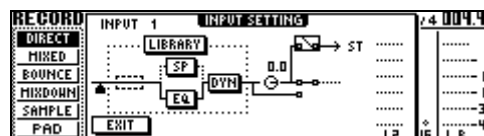
Input → Input Channel → HD REC Track → Track Channel → Stereo output

Set the Fader Flip preference to TRACK. The Faders control the 'Tracks' on the HD.

Let's concentrate on this second more complex routing because it will let us setup a separate Control Room Monitor mix – the 'subjective' mix. You can hear the 'scientific' mix (what is actually being recorded) in this scenario by disconnecting the TRACK CHANNEL and connecting the INPUT directly to the Stereo bus. This can be seen in two screens.



- 1) On the [MONITOR], ON/OFF screen – the top row you can connect the INPUT directly to the Stereo bus; the bottom row is the TRACK Channels. This screen will make it easy to A/B the INPUT signal versus the monitor mix.
- 2) On the INPUT SETTINGS pop-up screen we discussed above – you see the 'ST' connection. Highlighted below:



Understand this about the routing: If you have the INPUT routed directly to the STEREO bus **and** you have the TRACK Channel connected, "Record ready" to the Stereo Bus with the TRACK CHANNEL fader up – you will be monitoring the signal twice. You can avoid this by understanding which routing you are using and which one you want to listen to at that time. You want to use the INPUT to STEREO bus routing to check/verify record levels. You want the TRACK CHANNEL signal for your subjective monitor mix.

TR 'x'

REC: here is the signal connected to TRACK 1 in our example (i.e., Input 3 is going to Track 1, and Input 4 is going to Track 2). This represents the signal arriving at the assigned recorder track – where it will be routed through a Track Channel of the same number.

METER:

Highlighting and pressing the METER box will move the METER function to two different points on this INPUT SETTING screen. The first position is the INPUT position. The second position is the signal just prior to going to the disk and can be considered the REC Level (it is post effects, EQ, dynamics, and the fader).

That is the signal flow from the INPUT to the RECORDER. You can see the Meter doing the "work" – signal is being sent to the HD recorder and can be recorded. In our example, when you see levels for INPUT 3&4, then you know your signal is being sent and when you see RED LEDs for your Inputs and for your assigned Tracks (1&2) you know your signal is being recorded. Further you can monitor the METERS for Tracks 1&2 post the recorder. As an engineer there are times when you want to listen to the signal that is recorded (the 'scientific' mix) > route the INPUT to Stereo bus. And sometimes you want to listen to a more *musically friendly* balance (subjective mix) > route the recorder track through a Track Channel.

It is true that the scientific part of recording is that you must capture the optimum level on each recorded track – however, this does not make for a musically well-balanced mix. It usually sounds like a band where everyone is trying to play too loud. So you normally listen, NOT TO THE INPUTS but to the RETURNS FROM RECORDER. When monitoring the signal after the recorder, you can turn down items that were boosted to get good level. You can subjectively change the volumes in the mix without affecting the recorded level. In the monitor mix it is often the case that reverb is

added just to enhance the listening experience. Reverb is not always recorded in the initial process – of course, sometimes it is. After months of recording you will get to a point where you will know instinctively when to "commit" to the effects – but most recordings are done 'dry' with respect to reverb. Now, that said, in the case of specialty instruments like Guitar, effects may be recorded as the **rule**. Often a lot of their sound is the effect (not a value judgment – just a statement of fact). Therefore you will need to determine if you want to record the effects (apply them on the INPUT CHANNEL) or just monitor the effects (apply them on the TRACK CHANNEL). The AW16G is considered a 'pro' board because you can determine **this** very thing.

The fundamental difference:

To hear and control the signal returning from the hard disk you route the signal through TRACK CHANNELS. The principal difference between an INPUT channel and a TRACK channel is the Track channel is **post** the HD recorder. All the components are the same: an attenuator, a phase reverse control, an insertion point for an effect processor, a 4-band EQ, a configurable Dynamics processor, a pre-fader send, a fader, a post-fader send, a panorama potentiometer, and out.

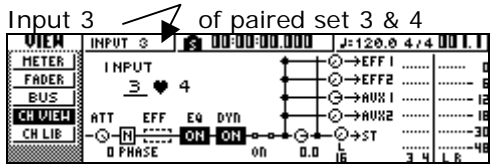
Signal that we routed to TRACKS 1 and 2 will return to the TRACK CHANNEL section through channels 1 and 2. There are 16 Track Channels that are ultimately routed to the Stereo bus and to our monitor outputs. In order to hear the signal, post the recorder you must raise the Track Channel FADER 1¹¹ and the STEREO OUT Fader.¹²

What you see is what you get

Use the [VIEW] button on the AW16G to select the CH VIEW screen. You can toggle between viewing the INPUT and the TRACK Channel. This will help us understand the similarity and the differences between the two Channel types. While viewing the CH VIEW you will be looking at either an **INPUT** or the **TRACK** channel (or PAD channel) depending on which was last selected. Press the INPUT 3 button, the screen will show you in the upper left portion that you are looking at the signal coming into Input jack number 3.

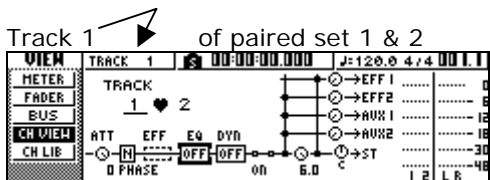
¹¹ When you PAIR channels the odd numbered fader is the master fader of the two – you actually need only move it.

¹² We could be returning the signal to any of the 16 track channels. If you ever thought that Input channels have some predetermined association with Track channels, they do not. Input 1 and Track channel 1 are not associated until you assign input 1 to track 1. Nothing is predetermined in terms of assignments!



Press INPUT 4 you are viewing the signal coming into jack number 4. If you make a change to any of the icons on this screen – the result will be recorded when you actually place the AW16G transport in RECORD. Inputs are ‘pre’ the HD.

Now press the TRACK 1 Select button. The screen, although it looks similar, is now the TRACK CHANNEL of Track 1.



Make it a habit to read the upper left-hand corner for exactly which you have selected. Any changes you make here, like adding effects or EQ or dynamics are **not** recorded and are in your monitors, only. Obviously, from the TRACK CHANNEL mix you can submit a headphone mix for your musicians. Musicians often want you to place them in a large reverberant hall setting with the reverb, but they don’t want you to record the reverb. This reverb helps them ‘hear’ themselves. It is why flute players love long hallways or will spend a fortune to sneak into the Taj Mahal – so they get that warm fuzzy that reverb gives them. By sending signal ‘post’ recorder we can tailor the sound subjectively without hurting the data we are recording. Sending the Track channel signal to the Aux outs can be a great way to set up a headphone system in your home studio.¹³ You can give the guitar player “MORE GUITAR” without distorting the input level or clipping on the recording.

The TRACK CHANNEL

Again press the [VIEW] button and select the CH VIEW screen. Touch Track Select 1 to view the overview of track 1. All of the devices we already

¹³ The AUX 1&2 outs can be fed to a separate headphone amp. You would send the signal to the aux outs ‘post’ the recorder, ‘pre’ the track channel fader. This would allow you to set a separate volume level from the one you are sending to your monitor speakers. The individual send levels can be seen on the track channel overview and on the AUX screen found under the PAN/BAL knob.

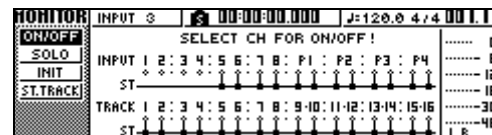
know because we discussed them on the INPUT channel side – the key point to understand is: although they are *same* type of devices, they are physically a different set of devices. The difference now is that any changes you make will not be recorded to the HD. Feel free to experiment change the Faders (you have the Faders set for Tracking) – it will not affect the signal going to the recorder.

Once you become familiar with the signal flow you can, at any time, switch things so that you can accomplish the given task. Do not feel that you have work one-way and only one way. The mixing console is a musical tool much the same as a synthesizer is a musical tool. The learning curve on a device like the AW16G is getting familiar with the screen views and knowing the signal routing. Once you feel confident in the routing process, you can begin to use the AW16G many tools as a creative entity.

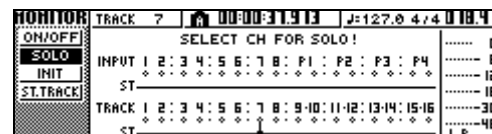
On close inspection of the flow chart you can see the Pre-sends (there is a dot at the connection). In the screen shot of the TRACK Channel above, EFF1 and EFF2 are POST-fader sends (the dot is on the *after* side of the fader), while AUX1 and AUX2 are set as PRE-fader sends. You can change them on this screen or on the AUX screen under the PAN/BAL knob – press the PAN/BAL knob to select AUX. Note the fader is set to –8.9 (a subjective listening level). When you move the physical fader for Track 1, this value will change because your FADER FLIP parameter is set to control the TRACK CHANNEL. Track 1 is panned to the hard left (L16). Remember nothing you do or assign on the Track Channel will affect the original multi-track recording data.

Familiarize yourself with these key screens:

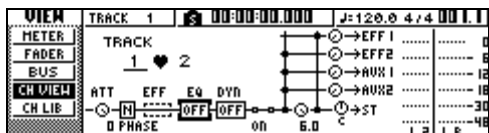
- [MONITOR], ON/OFF screen – This screen is for routing INPUTS and TRACKS quickly to the STEREO bus using the select buttons.



- [MONITOR], SOLO screen – Here you can isolate an INPUT or TRACK using the select buttons.

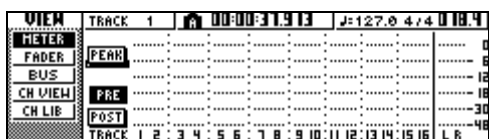


- [VIEW], CH VIEW screen – This screen let's you view an individual INPUT, TRACK (or PAD) channel depending on the select button.



In the screen above you can see that EFF1 is post fader while EFF2, AUX 1 and AUX2 are pre the fader. Left to right you see a channel Attenuator, a Phase reverse function (N = normal), Insert point for EFFECT processor, 4-band EQ, configurable Dynamic processor, Channel ON switch, pre-fader sends, Fader, post fader sends, panorama potentiometer (pan pot) and the Stereo output.

- [VIEW], METER screen – This screen let's you view INPUT levels (8 inputs plus the four stereo Pads, P1-P4) or TRACK levels (1-16) depending on the select button.



The PEAK setting will allow you to retain the highest level (this makes it easy to see if you distorted a record track. PRE is the signal prior to the channel devices, while POST is the signal after the channel devices. This means you can see your level prior to going through the EQ, DYN, Fader or after.

Roles Change

We've been discussing the Channels during the multi-track record process. During OVERDUB sessions you will be applying your knowledge of INPUT Channel versus TRACK Channel, because the item you are overdubbing will be a 'live' Input and the tracks that you are overdubbing on will be coming through Track Channels playing back. Each of the main functions of the Mixer/Recorder may require the roles of channels to change. During BOUNCING you are moving TRACK Channels to a LR bus which carries them to a new TRACK destination> making some Track channels

sources and moving them to a destination track(s).

After you have constructed your song onto the 16 tracks, you can setup for MIXDOWN. The role change of you channels here is that instead of setting up an alternate monitor mix, this time "what we hear is what we want to get" – during mixdown we are listening to the actual data – the stereo bus signal **is** the scientific mix at all times in the MIXDOWN scenario – every change is recorded to the stereo mix. The MIXDOWN process allows you to use the 8 INPUT Channels and the 16 TRACK Channels simultaneously to feed data to the STEREO L&R bus. Also feeding this bus will be the stereo output of each Quick Loop Pad and, of course, the stereo returns of the two effect processors are returned to the stereo at all times. With the AW16G you also have an option of bringing a stereo digital input signal in to the Stereo bus at the same time. The creation of the stereo track is a critical step in the process. This becomes the mix that can be burned (Mastered) to CD. You can store up to 8 different stereo tracks (mixes) with each song. The idea here is you can then choose the best one for burning to CD. The "alternate takes" are stored in one of eight virtual locations. You can edit together portions of the best mixes...this requires mastering the use of Markers and copy-and-paste editing. But that is another topic all together. Start recording...

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