

How to feed your musicians a well balanced diet

- What Signals to send for a Personal Monitor Mix

The big differences between the “main mix” and a personal monitor mix

1. The signal chain is very different



There are big differences between the house and the monitor mix:

House mix: mic-console (with processing) – amplification/pa processor – speaker system – the room and finally the ear

Personal Monitor Mix: mic-console (with no, same, or different processing) – personal monitor mixer – in-ear-monitor - ear (no room!)

The big differences caused by the transducers and hearing positions (open ear from the room vs. ear-plug) result in a totally different audible signal- even if they would use identical processing. That said, a mix that sounds good in the auditorium might not be good in an in-ear monitor at all.

2. The targets of the mixes differ even more



A mix for one individual to support and enhance the musical performance



A mix to deliver best and equal sound to everybody in the audience

Main Mix: "pseudo objective" (= there is a more or less common understanding about what is "good", so e.g. all voices and instruments well balanced, distinctive, smooth, and clear. The target is an "album style sound with live punch".

Monitor Mix: absolutely subjective. What's perfect for one musician can be a disaster for another.

First priority is usually on the own voice/instrument. The second priority on sources needed for the personal orientation (signals of the same group/ harmony/rhythm). Some signals might not be wanted at all (distraction) and such muted or very low in level - the result would be in most cases not pleasing for another person at all.

3. The person mixing



Performing music -
Focus on right brain side



Creating a mix for the audience -
Focus on left brain side

Creativity (musician) utilizes more of the right brain side, while analytics (engineer) utilizes more of the left brain side. The musician focused on the performance is "right brained" and should not get distracted by the mix (moving out of the "flow"). The engineer dealing with many channels, analyzing details, listening to the overall, adding dynamics, eq, effects...is clearly more utilizing the left brain side.

Understanding the Musicians

Musicians are on stage to perform- not to mix



The musician's main task is to play / perform; the mixing is an add-on to help improve the performance. It shouldn't be distracting at all.

About 10-20% of the musicians have (some) knowledge about mixing, they have a home studio, or even work as sound engineer or producer. That leaves about 80% to 90% as non-engineers - and many musicians don't even want to get involved with a „mixing console“ at all- because they are "afraid".

That's why we made myMix not look like a mixing console and developed a intuitive (meanwhile patented) user interface. It's much more like a hifi- or car stereo system to be

taken on also from the “non-engineers”. myMix is perfect for 100% of musicians, the 80% plus the 10% (engineers). It is as sophisticated or simple as the user likes it to be.

What signals should be used?

Every musician has to hear their own instrument and/or voice. In order to “monitor” thus control the own performance that is a must have.

Most musicians also want to hear everything else as well to know “what’s going on” – but not all the individual channels. Throwing in all the channels from the house console and having the musicians use them all will get very confusing for most of them- don’t forget they are musicians and their main task is the performance.

Too many channels can easily become overwhelming



Individual channels PLUS dedicated submixes

Get the musicians what they want – without losing overview

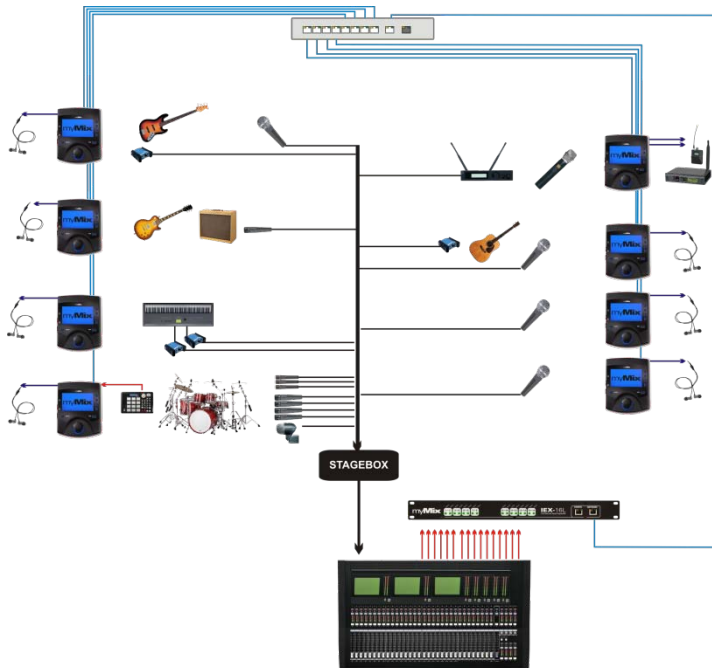
Having 32 or more channels for each musician is overwhelming. The perfect “diet” for the musicians contains: of course of the own instrument and maybe others from the same „group“ (all of them should be available individually)

PLUS

Useful sub mixes consolidating „the other“ channels.

Example 1

5 piece band + 2 vocals + 1 solo mic



A small set up to start with.

5 piece band, 2 musicians singing, two more vocalists and a wireless mic for the lead voice. A IEX16 at the console is taking 16 channels as direct out signals, or submixes.

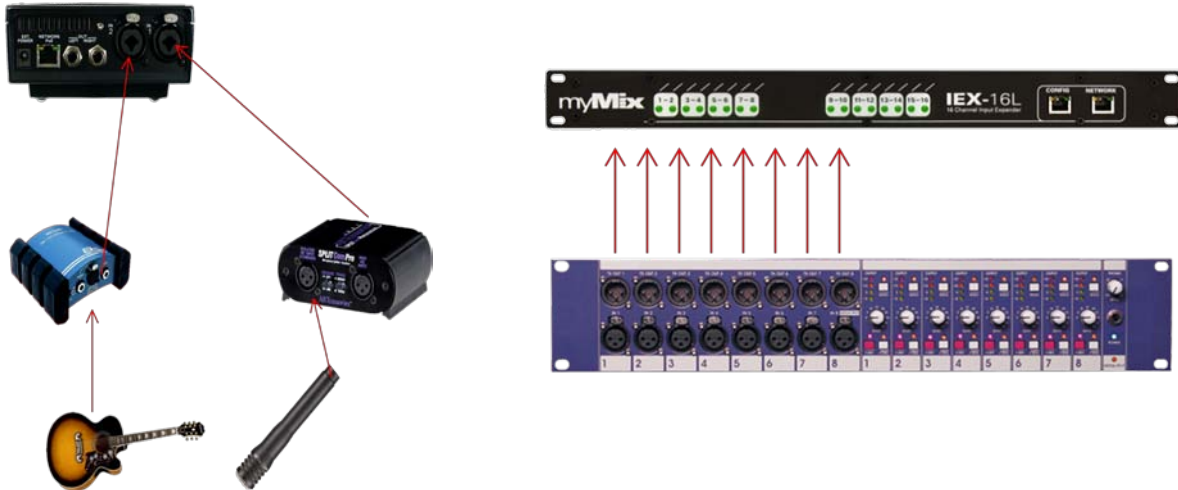
The toms and OH mics are consolidated in a stereo submix and also all vocal mics for all musicians

	FOH	for myMix	source	input	Drummer	Bass Player	Vocalist	Keyboarder
1	Kick	Kick	direct	IEX-01	x	x	x	x
2	Snare	Snare	direct	IEX-02	x	x	x	x
3	HiHat	DrumKit L	submix (aux)	IEX-03	x	x	x	x
4	Tom 1	DrumKit R	submix (aux)	IEX-04	x	x	x	x
5	Tom 2	Vocals L	submix (aux)	IEX-05	x			
6	Tom 3	Vocals R	submix (aux)	IEX-06	x			
7	OH Left							
8	OH Right							
9	Bass	Bass	direct	IEX-07	x	x	x	x
10	E Guitar	E Guitar	direct	IEX-08	x	x	x	x
11	Ac Guitar	Ac Guitar	direct	IEX-09	x	x	x	x
12	Solo Mic	Solo Mic	direct	IEX-10	x	x	x	x
13	Key L	Key L	direct	IEX-11	x	x	x	x
14	Key R	Key R	direct	IEX-12	x	x	x	x
15	Voc 1	Voc 1	direct	IEX-13		x	x	
16	Voc 2	Voc 2	direct	IEX-14		x	x	
17	Voc 3	Voc 3	direct	IEX-15		x	x	
18	Voc 4	Voc 4	direct	IEX-16		x	x	
		Click	stage	myMix-ch1	x	x		
					14/18	16/18	14/18	10/18

Small set up with only 18 channels at the main console – drummer uses the local myMix input for the click, which can be used from others as well (because all myMix inputs are network inputs!).

Want more channels (than your console can provide)?

Local Inputs On Stage - or IEX16 with Splitter



A big advantage of myMix is the “virtually unlimited” channel count on the network.

Even with larger groups everybody can get the own instruments/voice as individual channels for the mix. Now, that’s great but you may ask yourself how do I get that many channels into myMix?

- Every DI box on stage is a “free split” and can use local myMix inputs. Perfect for keyboards, bass, acoustic guitars, guitar pods/modeler. Mics (if you don’t want to use a Y-cable) through a split box
- If you need more individual channels the KT-Square One splitter is highly recommended. Microphones are fed from the isolated output to the main console and post pre-amp to the IEX16L.

With myMix you are not limited to the console outs, take advantage of the „virtually unlimited channel count – by offering individual signals (unprocessed) for your musicians.

Example 1- with more channels

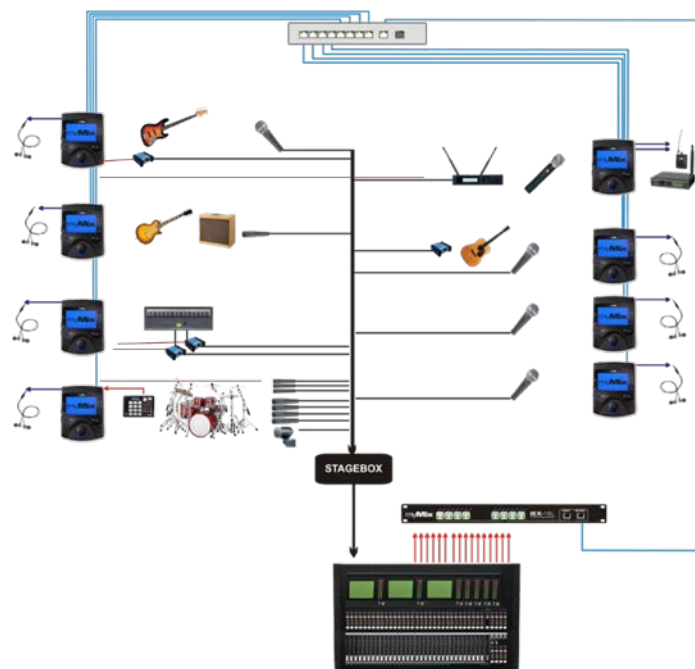
16 (via IEX16) + 6 (myMix local mic/line inputs)

	FOH	for myMix	source	input	Drummer	Bass Player	Vocalist	Keyboarder
1	Kick	Kick	direct out	IEX-01	x	x		
2	Snare	Snare	direct out	IEX-02	x	x		
3	HiHat	HiHat	splitbox	myMix1-ch2	x			
4	Tom 1	Toms L	submix (aux)	IEX-03	x			
5	Tom 2	Toms R	submix(aux)	IEX-04	x			
6	Tom 3							
7	OH Left		direct out	IEX-05	x			
8	OH Right		direct out	IEX-06	x			

9	Bass	Bass	DI Box	myMix2 - ch1	x	x	x	x
10	Ac Guitar	Ac Guitar	Di Box	myMix2-ch2	x	x	x	x
11	E Guitar	E Guitar	direct out	IEX-07	x	x	x	x
12	Solo Mic	Solo Mic	direct out	IEX-08	x	x	x	x
13	Key L	Key L	Di Box	myMix3-ch1	x	x	x	x
14	Key R	Key R	Di Box	myMix3-ch2	x	x	x	x
15	Voc 1	Voc 1	direct out	IEX-09			x	
16	Voc 2	Voc 2	direct out	IEX-10			x	
17	Voc 3	Voc 3	direct out	IEX-11			x	
18	Voc 4	Voc 4	direct out	IEX-12			x	
		Click	stage	myMix1-ch1	x			
		Drums L	submix (aux)	IEX-13		x	x	x
		Drums R	submix (aux)	IEX-14		x	x	x
		Vocal L	submix (aux)	IEX-15	x	x		x
		Vocals R	submix (aux)	IEX-16	x	x		x
					16/22	12/22	12/22	10/22

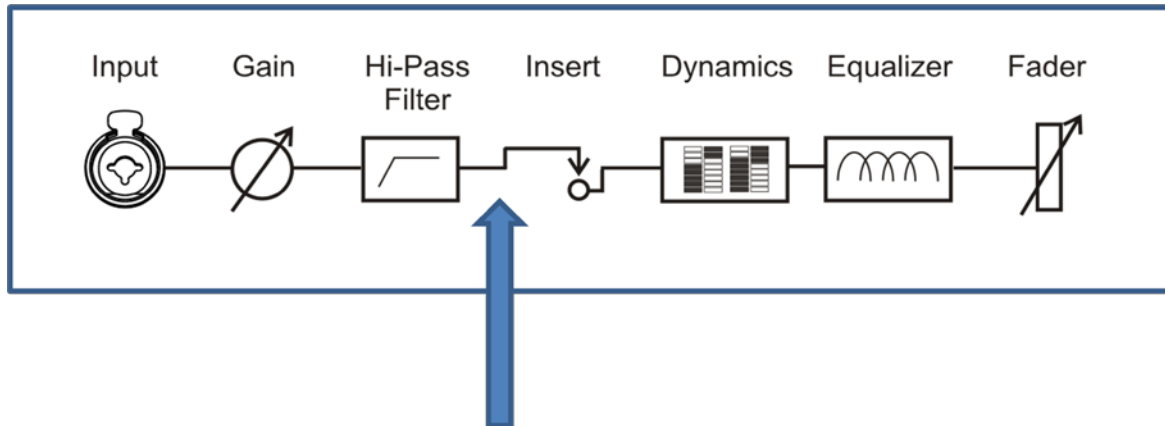
Six more channels to allow the drummer (and others if they like) a more detailed mix of the drum kit. Bass, acoustic guitar and keyboards are fed via the DI box link-through directly to a myMix.

The local inputs on every myMix are "almost for free": a myMix system with 8 myMix and 1 IEX16 is a 16 + 16 = 32ch monitor mixing system!



Where to get the signals from

Console Direct Outputs: unprocessed or processed



The preferred Signal is without processing. The processing applied to a single channel for the main mix might be counterproductive to the use for monitoring. E.g. a compressor needed to get the lead vocal smooth into the mix, doesn't allow the vocalist to really control the own dynamics. The channel equalizer is applied listening through the house pa - that might be a contradiction to what's needed for monitor on stage.

Get the signals as pure as possible and - Mix it in myMix!

Example 2: band/small orchestra – choir- solo mics

Individual channels for the dedicated musicians/vocalists + Submixes

FOH Input Channels			
1	Kick	23	Soprano 1
2	Snare	24	Soprano 2
3	HiHat	25	Alto 1
4	Tom 1	26	Alto 2
5	Tom 2	27	Tenor 1
6	Tom 3	28	Tenor 2
7	OH Left	29	Bass 1
8	OH Right	30	Bass2
9	E-Pad	31	Violine 1
10	Bass Guitar	32	Violine 2
11	E Guitar 1	33	Viola 1
12	E Guitar 2	34	Viola 2
13	Ac Guitar 1	35	Cello 1
14	Ac Guitar 2	36	Cello 2
15	Key 1	37	Saxophone1
16	Key 2	38	Saxophone2
17	Piano L	39	Trombone
18	Piano R	40	Trumpet
19	Solo Mic 1	41	Playback L
20	Solo Mic 2	42	Playback R
21	Solo Mic 3		
22	Solo Mic 4		

The power of not being limited in audio channels on the network and allow not only an individual mix, about an individual selection comes increases with the amount of musicians on stage.

Now a larger set up: a full band with drums, bass, 4 guitars, 3 keys, a string section and woodwinds/brass, plus small choir and 4 solo mics. Together with 2 channels for playback and some effects the main mix will be about 50 channels.

Now for monitors -with the exception of all drum mics- all individual channels plus some dedicated submixes (using the aux busses, or subgroups and matrix outputs from the main console) are use as signals for the personal monitor mix.

The recommended submixes for this set up include:

Drum Kit L/R (one stereo channel) - a submix of all the remaining drum mics

Rhythm L/R (one stereo channel) – a sub mix containing drums, bass, and all guitars, especially for all musicians not part of that group.

Band – a sub mix of the entire band for all vocalists. For this stereo mix matrix outputs might be useful.

Strings, Brass/Woods, Solo Mics, Choir, Guitars, Keys and Drums are mono submixes of each group. The foldback channel is a generic mix for sources like playback, talkback, and other signals that might appear occasionally. The total channel count for myMix is 50.

Signals for monitor system			
1	Kick	27	Soprano 1
2	Snare	28	Soprano 2
3	HiHat	29	Alto 1
4	E-Pad	30	Alto 2
5	Bass Guitar	31	Tenor 1
6	click	32	Tenor 2
7	E Guitar 2	33	Bass 1
8	Ac Guitar 1	34	Bass2
9	Ac Guitar 2	35	Solo Mic 4
10	Key 1	36	E Guitar 1
11	Key 2	37	DrumKit L
12	Piano L	38	DrumKit R
13	Piano R	39	Rhythm L
14	Violine 1	40	Rhythm R
15	Violine 2	41	Band
16	Viola 1	42	Band
17	Viola 2	43	Strings
18	Cello 1	44	Brass/Woods
19	Cello 2	45	Solo Mics
20	Saxophone1	46	Choir
21	Saxophone2	47	Foldback
22	Trombone	48	Guitars
23	Trumpet	49	Keys
24	Solo Mic 1	50	Drums
25	Solo Mic 2		
26	Solo Mic 3		

Here is an example on how the individuals on stage may select the channels for their monitor mix:

Drummer	Violinist	Choir	Soloist	Pianist	Bass
Kick	Violine 1	Soprano 1			Bass Guitar
Snare	Violine 2	Soprano 2	Solo Mic 1	Key 1	click
HiHat	Viola 1	Alto 1	Solo Mic 2	Key 2	Kick
E-Pad	Viola 2	Alto 2	Solo Mic 3	Piano L	Snare
Bass Guitar	Cello 1	Tenor 1	Solo Mic 4	Piano R	HiHat
click	Cello 2	Tenor 2			E-Pad
Strings	Rhythm L	Bass 1	Band	Strings	Strings
Brass/Woods	Rhythm R	Bass 2	Band	Brass/Woods	Brass/Woods
Solo Mics		Band		Solo Mics	Solo Mics
Choir	Brass/Woods	Band	Choir	Choir	Choir
Foldback	Solo Mics	Solo Mics	Foldback	Foldback	Foldback
Guitars	Choir			Guitars	Guitars
Keys	Foldback	Foldback			Keys
	Keys			Drums	
Drum Kit L				Bass Guitar	
Drum Kit R					

14 ch on screen 16/50 12 ch on screen 14/50 11 ch on screen 14/50 7 ch on screen 12/50 11 ch on screen 16/50 13 ch on screen 14/50

Drummer: selection of the most important individual signals (kick, snare, hihat,) and submixes from all the other groups.

Violinist: violin and all other mics of this group as individual channels. They have a clear meaning to everybody in this group and based on personal preferences each musician would probably like to listen to a different mix. All other channels are brought in as sub mixes.

Choir: all vocal mics of the choir as individual channel to allow each singer a truly individual monitor. To simplify the overall mixing they select the submix band.

Soloists: very similar as the choir, the solo mics as individuals everything else as submix. This will keep a very clean screen with only 7 channels (“band” = stereo channel, shows as one) to control. **Pianist:** of course the all key instruments as individuals, the rest as groups/sub mixes.

Bass: Very similar as the drummer, but not all drum mics, therefore kick, snare hihat and click available individually.

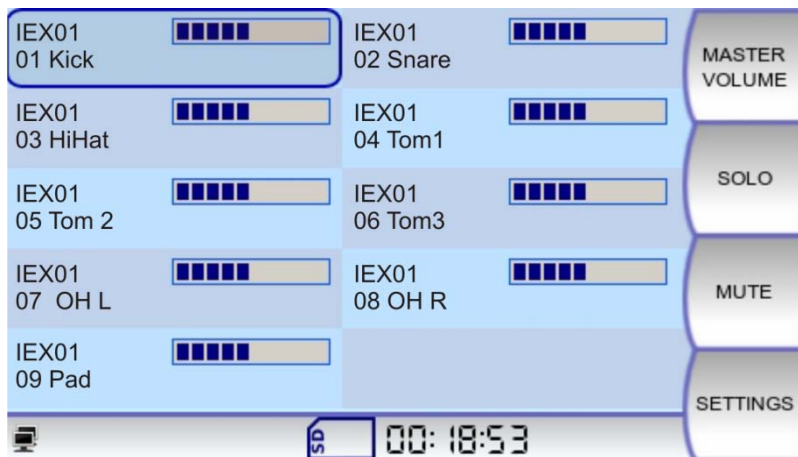
This could be continued and there are many other options to achieve great results. The key message is to use “virtually unlimited channels” not to overwhelm the musicians by having them to use all (otherwise they would miss out on certain signals), but serving a “well balanced diet” of dedicated submixes in addition to the important individual channels.

Detail where it’s meaningful – simplicity where it helps.

The drummer wants to create the drum submix him/herself?

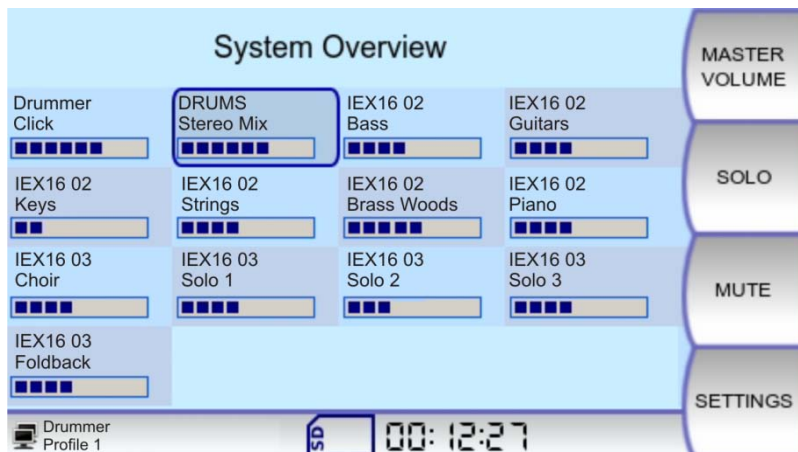
Easy with myMix

Let's say the drummer is in fact a sound engineer and wants to control the entire drum kit him/herself. That's easy to achieve with myMix: using one myMix for all drum channels, the drummer can create a submix of the drums and send this mix to the network (Stereo Mix Drums).



This drums submix in the network can be selected from any other myMix like any other stereo source.

To listen to the other signals, the drummer takes a second myMix – which also drives the listening devices – selects the stereo mix of the drums in plus select all the others channels he/she wants to listen to.



In the example above we have: click (local myMix input), the stereo sub mix of the drums (from first myMix), and then bass, guitars, and all other channels. The drummer controls 9 channels + 12 channels individually (and can also record them all as multi track).

Using two myMix one can control a total of 30 individual signals – 16 on the first and another 14 on the second. But as said before – that's the exception for the musicians/engineers.

How to integrate ambient microphones “In Concert”



- Ambient mics can be good to capture feedback from the audience
- in most applications ambient mics need to be “driven” by a sound engineer

In order to get a good coverage of the audience the ambient mics will also capture the sound from the main pa. If that signal is fed back to a monitor mix while playing, it'll mud up the whole monitor sound, so it is necessary to lower or even mute the ambient mics during the performance and bring them up in the breaks. To take away stress from the musicians, that should be done by the engineer (a musician can easily get into trouble if he/she forgets accidentally to turn ambience off).

Suggestion: ambient mics can be a part of „foldback mix“ from the console that could also send other occasionally used sources. The engineer takes care.

Note about ambient mics in general:

There are many rumors about ambience mics and their role in making IEM sound better, one is: “If you are going to use In-Ears you need to have an ambient mic ... otherwise you'll have a very strange isolated feeling”.

That has nothing to do with the ambient mics. The strange, isolated feeling is mainly cause by the one.-dimensional sound many musicians have in the IEMs. Ambient mics can be good to capture the audience. They do contain room information, but they don't help a lot recreating a 3D sound image for IEM's. To offer a 3D sound it is necessary to pan (2d) all sources and add individual stereo reverb/room effects to them. “See Seminar about Fundamentals when using IEMs”.

This and other webinars on
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