

# FESTIVAL AND EVENT PRODUCTION

## Audio Guide

Basic Outline - Full Page Coming Soon:

**Other Production Guides:** Lighting - LED / Video - Staging - Backline

**Quick Jump:** Mics - PA Speakers and Amplifiers - Consoles - Examples of PA Sizes

### Audio Basics

How audio is reproduced - normal spectrum of the human ear (20 to 20).

Recommended decibel levels

Typical audio elements at a given event or festival

Microphones

Loudspeakers (or Mains)

Subwoofers

Amplifiers

Mixing Consoles

Front of House

Monitor World

Onboard Processing

FOH Rack

Stage Rack

Show files

Monitors

Side and front fills

Delay towers

Power needs

**Microphones** - there are three main types:



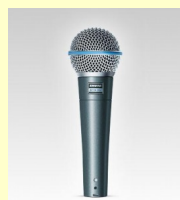
**Ribbon** - operating on magnetic principle, a thin metal ribbon is suspended in between two poles of a magnet, which then vibrates in response to sound waves. The most fragile type of microphone, these are also used more in the studio, and they often have a fuller and warmer sound than moving coil mics when used close up.

Examples: Beyer M160 / RCA 77-DX / Royer 121



**Condenser** - operating on a variable capacitance principle, a metal coated piece of plastic vibrates in response to sound waves. The most accurate type of microphone, these are the preferred mics for studio recordings; however, they are not usually ideal for live music as their flat frequency response tend to cause feedback.

Examples: Shure KSM 44, SM 82 / Neumann U87, U89 / AGK 414 / Schoeps CMC 5U





**Moving Coil** - operating on magnetic principle, a copper coil moves up and down a cylinder suspended around a magnet in response to sound waves. These are the standard for most live music situations, but they are not the best at capturing subtle changes.

Examples: Shure SM57, SM58, Beta 57, Beta 58 / Sennheiser 421 / AKG D12

## Loudspeakers or Mains

Below is a grid of some of the most popular speaker systems - while most of these are used in medium to large setups, they are all scalable to fit almost any size or budget:

	Name	Usable Spectrum	Horizontal Pattern Coverage (degrees)	Peak SPL	Offered by:
	<b>L'Acoustics K1</b> 3 way	35Hz to 20kHz	90	147dB	
	<b>d&amp;b J Series</b> 3 way		80 (J8) and 120 (J12)	145dB (J8) and 143dB (J12)	<b>Big House Sound</b>
	<b>Clair I-5 Series</b> 3 way		90 and 120		
	<b>JBL Vertec 4889</b> 3 way	40Hz - 18kHz		116dB HF	<b>Miller Pro Audio</b>
	<b>JBL VTX Series</b>	35Hz - 20kHz	90		<b>Miller Pro Audio</b>
	<b>Nexo STM</b>	85Hz - 20kHz (mains)	90	145dB	<b>Nomad Sound</b>

	<b>Meyer LEO</b>	55Hz - 16kHz			
	<b>Adamson E Series</b>	60Hz - 18kHz	90	147dB	<b>Big House Sound</b>

### Subwoofers

Below is a grid of some common subs:

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### Monitors

Below is a grid of some common monitors:

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### Amplifiers

Below is a grid of some common amplifiers:

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### Consoles

Below is a grid of some common audio consoles:

	Name	Channels	Digital / Analog	Notes
	<b>Avid Profile</b>	24	Digital	24 input faders / 8 output faders <b>Spec sheet</b>
	<b>Avid SC48</b>	48	Digital / Analog	48 analog inputs / 16 analog outputs <b>Spec sheet</b>

	<b>Avid D-Show</b>	up to 56	Digital	<b>Spec sheet</b>
	<b>Behringer X32</b>	32	Digital	
	<b>Midas XL4</b>	48	Analog	
	<b>Midas XL8</b>	96	Digital	
	<b>Midas H3000</b>	52	Analog	
	<b>Midas Pro2</b>	64	Digital	
	<b>Midas Pro6</b>	80	Digital / Analog	

	<b>Yamaha PM5D</b>	48 mono + 8 stereo	Digital	PM5D-RH is also available - <b>see spec sheet</b> for both
	<b>Yamaha M7CL</b>	Up to 48	Digital	<b>Spec sheet</b>
	<b>Digico SD7</b>	253	Digital	
	<b>Digico SD8</b>	60	Digital	
	<b>Digico SD9</b>	48	Digital	

### What level of PA should an event or festival have?

When determining the amount of PA you should have, you need to take into consideration the following factors:

How long of a throw do you need? In other words, how far back from the stage do you need to comfortably hear the music?

How many people do you expect to attend and how large of an overall crowd space will there be for the sound to be heard?

Are you indoors, where the sound will be reflected off the walls, or outdoors where it will freely go out until the sound wave dissipates?

## Small event or festival

Very small events (crowds under 100 people) that aren't on a large stage can usually get by with something simple like the below - 2 speakers on a stick, simple mixer, and a couple of monitor wedges. Most audio rental companies will offer a package like this along with a tech, or you can purchase your own for a few hundred dollars.



**[View more about this setup from Amazon](#)**

Small events (crowds under 500 people) normally will need at least 2 to 4 mains per side and 2 subs to achieve the proper sound coverage

Medium event or festival (crowds between 500 and 5,000 people) will need anywhere from 4-8 mains per side and 4-8 subs.

Large event or festival (crowds between 5,000 and 20,000 people) will need anywhere from 8-16 mains per side and 8 to 16 subs.

Very large festivals (crowds in excess of 20,000 people) will likely need additional delay towers to increase the overall throw of the audio to the farthest reaches of the crowd.

## How to best work with artists to ensure a smooth show from an audio perspective

Advancing with their FOH / PM

Making sure everyone knows what they're getting

Seeing if they can work with the PA they are given

## How to ensure the audio company has everything they need to put on a great show

Proper labor

Parking

Storage

Power

Meals

Shade

Credentials

Schedule

Stage Plots / Input Lists

Contacts of the bands PMs/FOH people if necessary



Amp Racks from Monitor World, using an SC48 Console