

## Retrieval



### Signal Flow

All sound you record must go through a chain, which we call the **signal flow**. A variety of analogue, digital and MIDI cables are used for these



USB to 5 pin MIDI / DIN

- MIDI cable
- Carries data from MIDI instrument to computer



#### TS Jack

- Analog audio unbalanced cable
- Carries mono sound signal to amp, speakers, mixing desk, audio interface

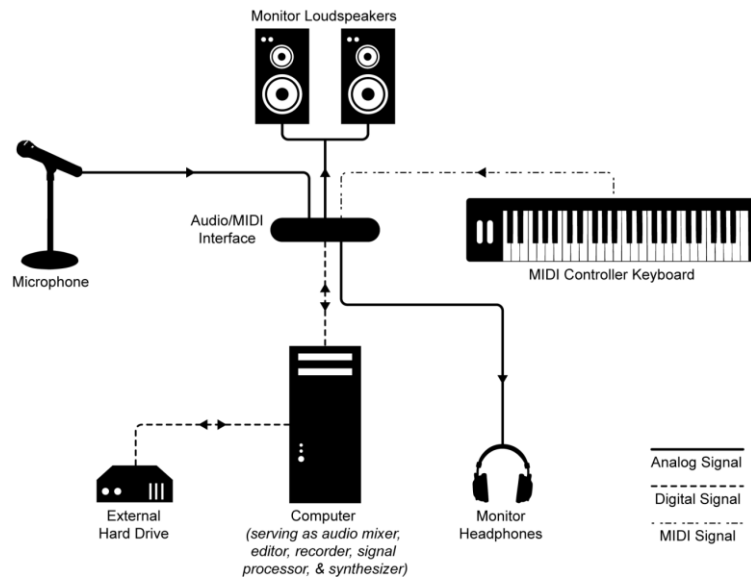


#### XLR

- Analog audio balanced cable
- Carries stereo sound signal to amp, mixing desk, audio interface.
- Can carry phantom power

#### TRS Jack

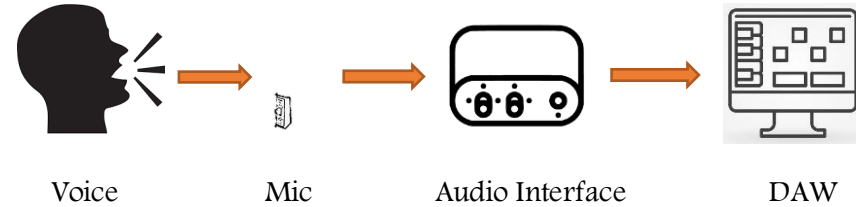
- Analog audio balanced cable
- Carries stereo sound signal to amp, speakers, mixing desk, audio interface



## Unit 3: Sound Creation



### Recording



### Types of microphones



#### Dynamic Microphones



#### Condenser Microphones

	Dynamic Microphones	Condenser Microphones
Construction	Simpler	More complex
Cost	Less expensive	More expensive
Handling	Tolerates very rough handling	Requires more careful handling
Sound Quality	Excellent over a wide frequency range	Very sensitive, smooth, natural sound even at the highest frequencies
Power Source	Does not require a separate power source	Requires phantom power or batteries
Environment	Good for live performance and some recording applications	Good for controlled environments, recording and some live applications

## Audio Interface

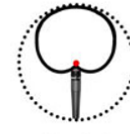
These enable you to transform your audio recording to digital data in your DAW. They are A/D devices, which means that they transform analogue into digital.



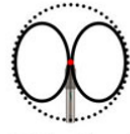
## Polar Patterns



**Omnidirectional**  
Records sound from all directions. Good for big groups & room ambience.



**Cardioid**  
Records only directly in front. The most useful for single instruments & voices.



**Figure 8**  
Records on front & back, rejecting sides. Good for duets.

## Troubleshooting

Problem	Solution
There is no sound coming into the DAW from your microphone.	<ul style="list-style-type: none"> <li>Turn the gain up on the audio interface</li> <li>Check that there is phantom power for a condenser mic</li> </ul>
You can't hear the instrument while recording.	<ul style="list-style-type: none"> <li>Ensure the track is record enabled &amp; input monitoring is on.</li> </ul>
The sound isn't coming out of your headphones or speakers.	<ul style="list-style-type: none"> <li>Check that audio preferences have been set to the correct output.</li> </ul>

## Monitoring

Monitoring is crucial for many reasons.

- The musician needs to hear the click track while recording
- The sound engineer needs to hear whether the recording was good enough
- The sound engineer needs to compare the track to others to make sure it's professional enough

You can monitor sound on headphones or studio monitors (speakers). You should use a combination of both.

Headphones	Studio monitors
<ul style="list-style-type: none"> <li>Most useful for monitoring while recording</li> <li>Closed-back headphones minimise spill</li> <li>Headphones often have features such as bass boost, which you need to take into consideration while mixing</li> </ul>	<ul style="list-style-type: none"> <li>Studio monitors should be matched (paired) and spaced apart so that you can hear panning</li> <li>They are often better at recreating the real mix</li> <li>You should compare your mix to other professional tracks on monitors regularly</li> </ul>

## Health and Safety

Category	Problem	Solution
Trip Hazards	XLR cables, Jack leads, power cables and headphone cables might be trailing across the floor in the studio.	When setting up, ensure that cables are as short as possible and not trailing around all over the floor, to do this, you can coil any excess cable and wrap them around the microphone stand. Ensure that you are alert of where you are stepping at all times.
Hearing Damage	Recording instruments in a small environment can result in high air pressure levels and therefore hearing damage.	If you find yourself in the music studio often, then consider purchasing ear plugs or noise cancelling headphones in order to protect your ears. Also, keep the gain down to reasonable levels.
Fire Hazard	Due to the substantial amount of electronic equipment, overheating, therefore resulting in an electrical fire is a constant risk.	Avoid overloading plug sockets or getting liquids near them. Any small fires can be tackled with fire extinguishers. If undiscovered, there should also be smoke detectors and a sprinkler system.
Computers	Computers can also damage your back and damage your vision when using them for a long period of time.	This can be resolved by keeping and maintaining the correct posture when sitting at a computer. Taking breaks regularly can lessen the strain on your eyes and your back.