The Studio

There are some basic differences between an on-air and production studio.

On-Air Studios

- Generally everything in the studio is designed for live, immediate use.
- Key pieces of equipment are easily within reach of the announcer.
- Information and play-out systems are present.
- Often mixing desks and equipment are chosen that have a limited number of buttons/options to assist in smooth on-air operation.
- The studio should be equipped with talkback and cue systems so audio sources can be auditioned before they go to air.
- On-air studios are often located close to newsrooms or programming departments.
- As a legal requirement a continuous recording will be made of the on-air broadcast and kept for at least 35 days (in case a listener complains about a broadcast)
- The studio should be equipped with speakers so that you can hear what is being outputted from the studio (Programme) AND an RF (Radio Frequency) feed - the output of the station after it's been broadcast.
    - In a live situation being able to listen "off air" (as broadcast on RF) is important so that you can identify any technical issues, i.e. are you actually broadcasting.

    But sometimes you will need to listen to Programme:

    - There may be a delay in the digital circuits from the station to the transmitter (so you will hear the audio in delay if listening to RF)
    - The station may be using a digitial delay unit (e.g. Talkback radio situations may delay the studio output by 10 – 30 seconds)
    - If you are doing a national broadcast, even if your local transmitter is off air, you have to assume that it is being broadcast somewhere and so you should monitor Programme.

Production Studios

- Generally the studio is designed for production work that takes longer than real-time.

- The mixing desks and equipment may have more sophisticated options for manipulating and assigning audio (more buttons and patch bays).

- Often production studios are designed to accommodate multiple setups – i.e. you may be recording a single voice, a roundtable discussion, a small music group or voicing a commercial.

- The studio may have higher quality monitoring speakers so that you can hear intricate details.

- Production studios will generally be located away from noisy environments so they can obtain very clean recordings.

Audio Path

Generally the audio in a studio environment follows this path:

sound input (e.g. microphone) > mixer > recorder > sound output (e.g. speakers)

If you cannot hear a sound source, trace the fault along the audio path:

- Does the sound source get into the mixer?
  (e.g. can you see the mixer audio meters move when you talk into the microphone)
- Does the sound get from the mixer into the recorder?
- Does the sound get from the recorder to the speakers?

Interference

Sometimes in a studio environment you may find you get an induced hum or buzz in your recordings. This may happen if:

- There are crossed or bunched audio wires with power cords
  (tip: cross audio wires and power cords at 90 degrees to limit interference)
- You stand with a recorder under a fluorescent light
- Your recorder is being powered through a mains power supply which is incorrectly earthed.
- You place a microphone near a computer or video monitor
- You place a cellphone near your mixer, audio converter, computer etc

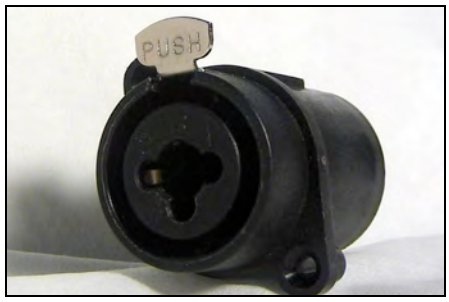
Connectors and Cables

Balanced

You will generally find balanced cables in studios. Balanced cables have a greater tolerance for rejecting external electromagnetic interference. This is because they contain two identical wires which are twisted together and then wrapped with a third conductor (foil or braid) that acts as a shield.

Balanced cables use professional 3-pin connectors called XLR or Canon connectors. Cables generally have a male and female end.

The audio path is normally male to female connector, e.g. a microphone has a male connection which connects to a cable with a female connection. You can also get a variety of sex-changer adaptors (male-to-male, female-to-female)



XLR connector photo by Michael Piotrowski, WikiCommons
XLR/phone plug photo by User:Omegatron, WikiCommons

Unbalanced

Unbalanced cables are often used in more domestic situations – like CD cables. Generally they will have an RCA connector or 3.5" jack. Unbalanced cables are more susceptible to interference. 3.5 jacks are also problematic in that they can easily fault with wear and tear.

3.5" stereo jack

¼" stereo jack (tip = left, mid = right, base = ground)

RCA jacks and plugs

Mini jack photo by Evan-Amos, WikiCommons
¼"jack photo by Rama, WikiCommons
RCA jack and plug photo by Namazu-tron, WikiCommons