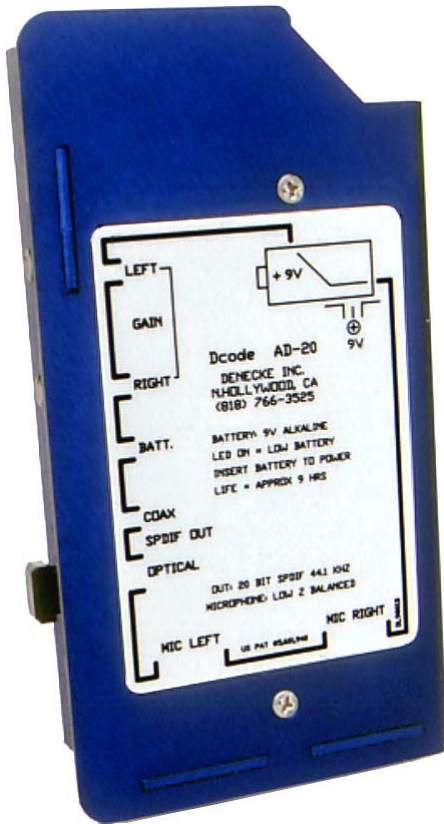


# DCODE® AD-20



The Dcode® AD-20 couples a high quality 20 bit analog to digital converter with a low noise balanced microphone pre-amp. Your AD-20 package includes an S/PDIF cable that converts normal RCA coaxial connectors to the mini connector on the side of the AD-20. A belt clip is also included for field work. The S/PDIF optical output is a standard toslink connector common on many DAT and MD recorders. If you are using a portable MD recorder you might need a cable from Sony to convert from standard optical toslink to the Sony mini optical/line input. Both coaxial and optical digital outputs run at the same time so you can connect more than one recorder to the AD-20 if you wish.

The AD-20 will last for over 8 hours on a standard alkaline 9 volt battery. Denecke's patented quick-snap design makes inserting and removing batteries so simple that there is no need for an On/Off switch. Simply snap the battery down into the slot (contacts first) with your finger and you are ready to go. If you insert the battery backwards (reverse polarity) you will not damage the AD-20 or drain the battery. You may store batteries in the AD-20 in this fashion and simply snap it out, turn it over and snap it back in to turn on the AD-20. When the AD-20 is on the optical toslink output will be lit red. If the optical out does not light up red then either the battery is in reverse polarity (i.e. the box is OFF) or the battery is dead. The low battery light on the AD-20 will come on during the last few minutes of recording before the A/D quality degrades. Batteries should be swapped out soon after the low battery light comes on. The low battery light can also be used to check for dead batteries. External power can be supplied through the mini jack in the battery compartment (anything from 6 volts to 24 volts, positive tip).

## The A/D Converter:

The digital output on the AD-20 is a 20 bit 44.1Khz S/PDIF signal. Because the dynamic range of the AD-20's A/D is about 103dB A-weighted or 98dB unweighted this equates to about 16.5 bits of resolution before the natural noise of the A/D can be heard. Because the natural noise floor of the system hangs right on the 17<sup>th</sup> bit, the AD-20 also works great as a 16 bit recording device without the need for additional dither (noise) to

be added to the signal. You might say the AD-20 has its own natural dither. Had the S/N of the AD-20 been beyond 17 bits then additional dither noise would need to be added at the 17<sup>th</sup> bit to avoid excessive quantization noise. Of course using a recorder or computer capable of capturing 20 or 24 bits will result in even greater dynamic range from your AD-20. If you have the gain knobs adjusted to a very high gain level some of the mic pre-amp noise will also be heard at the bottom of the dynamic range.

## The Microphone Pre-Amp:

The AD-20 offers true balanced mic level inputs on two XLR connectors. In order to connect unbalanced mics to the AD-20 you should use a cable that will properly balance the signal (usually this involves a small resistor/pad between ground and the 2<sup>nd</sup> leg of the balanced input that isn't being used). The mic pre-amp has a low noise 129dB EIN A-weighted input and distortion is a mere .0015% THD+N at minimum gain. The individual gain pots can be used to adjust the gain on either channel. The gain of the pre-amp is hard to measure because there is no analog out (just digital). At the lowest gain it takes a -5dBu signal to reach 0dB 'clipping' on the digital input. At the highest gain setting it takes a -46dBu signal to reach 0dB 'clipping' on the digital input. This gives the AD-20 a range of about 41dB.

## FEATURES

- Long battery life: Approximately 8 to 10 hours from one 9 volt battery.
- Low noise 125db EIN unweighted at max gain (+45dB).
- Dynamic range at minimum gain (+17dB) is 97dB unweighted.
- Individual gain pots for left and right.
- Low battery indicator LED.
- External 9 volt input for studio work.
- Optional line input cables with 22dB pads (10K input Z).

## SPECIFICATIONS

- Power:** 5.5V to 25V at 50ma
- Size:** 3" x 5.75" x 1.25"
- Weight:** 14 oz.
- Input:** Balanced 3 pin XLR at 10K ohm microphone level.
- Output:** S/PDIF optical (toslink) and coaxial (on 1/8th inch mini-jack).

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