

# Back to Basics: How to Set Up Your new HDTV

Everything you need to know to get your new high-def set hooked up right and looking great

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So you finally went out and bought a high-definition TV. Congratulations — you've joined a growing community of people who've switched to the new digital technology. Considering HDTV's stunningly realistic, widescreen images and Dolby Digital sound, it's easy to see why more and more home-entertainment enthusiasts would rather have an HDTV than an apprenticeship with Donald Trump.



But because HDTV is relatively new, a lot of people still aren't aware even of the basics. For example, many don't know that an "HD-ready" set (a.k.a. an HDTV monitor) needs to be connected to an outboard digital tuner before it can receive any highdefinition shows. Or that just because HDTVs "upconvert" standard TV signals for display in the higher-resolution 720p (progressive-scan) or 1080i (interlaced) format doesn't mean the programs are true HDTV. To view honest-to-goodness high-def broadcasts, you need the proper equipment, properly connected, *and* you need a high-def signal.

Before delving into the various connection options, let's review some basic TV-setup considerations. Whether you go with a direct-view, rear-projection, or flat-panel model — or even a front projector — you'll want to roughly match the screen size to the room so you won't have to sit too close or too far away to see the whole picture in full detail. A general rule of thumb for comfortable viewing distance is about twice the diagonal screen size (1 1/2 times if you're using a front projector). For example, if your set has a 40-inch screen measured diagonally, you should sit at least 6 1/2 feet away.

Room lighting is also important. For daytime viewing, place the TV where windows can't shine light onto the screen. And for best nighttime viewing, situate lamps so their reflections don't appear on the screen.

You use the same composite-, component-, or S-video connections found on a regular analog TV to hook up standard video sources like a DVD player or an analog VCR to an HDTV. But hooking up HDTV sources can involve setup and connection options you might not be familiar with, which are covered below.

### **Getting to the Source**

High-definition TVs come in two varieties — monitors and integrated sets. HDTV monitors require an outboard digital tuner to receive high-def signals, whereas integrated sets have an HDTV tuner already built in. (Until recently, HDTV monitors were more common, but the trend is toward integrated sets.) You can get HDTV signals in three ways: via an off-air antenna, an HDTV cable box, or an HDTV satellite receiver.



**The distance between your HDTV and your viewing position should be at least twice the screens diagonal measurement.**

Off-air antennas, which provide access to local HDTV broadcasts, come in indoor and outdoor versions. [AntennaWeb.org](http://AntennaWeb.org) is the best place to start looking for an antenna. Enter your address, and the site tells you where high-def stations are located in relation to your house and what kind of antenna you need to pick them up.

For example, you might need to put a medium or large directional antenna on your roof if you live in a one-story house surrounded by taller buildings, while a smaller multidirectional antenna might do the job for a multistory house on a property free of obstructions. Consider an indoor antenna if you live in an apartment building that won't let you have an outdoor antenna, or if you don't want one on your roof.

HDTV cable boxes and satellite receivers are similar to their non-HD counterparts but have additional connections and features to provide high-def programming. Some new models even include a hard-disk drive, which gives you TiVo-like functions such as automatic recording of favorite TV shows and pausing live TV.

Some new integrated sets have a CableCARD slot. The creditcard-size CableCARD, which is furnished by your cable provider, lets you connect the cable feed directly to the TV and tune in premium channels you've subscribed to without having to install a cable box. Of course, if your cable or satellite service doesn't carry all of your local HDTV stations, you'll probably want to add an off-air antenna so you can receive them.

You have many options for making the video connection between an HDTV tuner and monitor. The most common is to run component-video cables from the set-top tuner box to the TV. Or you could instead run the cables to an A/V receiver and then make a component-video connection from the receiver to the TV. This is more convenient if you want to use the receiver to switch between other component-video sources, like your DVD player.

*Important:* When making high-def component-video connections through a receiver, make sure the receiver can handle the wider bandwidth of HDTV signals, or you'll lose picture detail. The receiver's manual or product literature will typically refer to these connections as "wide-bandwidth," "HDTV-compatible," or just "wideband." Also, make sure your installation hardware — cables, splitters, and other components such as signal amplifiers — can handle the full HDTV bandwidth. Your hardware should have a bandwidth of at least 110 megahertz (MHz) to ensure that there's no degradation of the HDTV signals passing through it.

Many HDTV tuners also have a DVI (Digital Visual Interface) output, which provides a top-quality, all-digital video connection. To use it, your HDTV monitor has to have a DVI input, and it's a good idea to make sure it's compliant with the HDCP (Highbandwidth Digital Content Protection) copy-protection scheme some program providers have started using. (HDCP uses a transmitter and receiver with encryption at each end to pass programs from a tuner to a TV.) An upgraded version of DVI, the HDMI (High Definition Multimedia Interface) connector, which can handle both audio and video, is beginning to appear on HDTVs. Eventually, all high-definition tuners — and maybe all audio/video components and TVs — will have this connector. Some HDTV tuners and sets also include an analog VGA jack for connection to a computer. Another connection — RGB+H/V (red, green, and blue plus horizontal and vertical sync signals) — is found mostly on high-end front projectors.

Once you connect the tuner, you'll need to set it to match your TV's display format. There will be a switch or menu option for selecting 720p or 1080i output, depending on your set's native resolution. Flat-panel LCD and plasma TVs often have a different native resolution — such as 1,024 x 768

— in which case the set will convert the signal as needed. If you're not sure what display format your TV uses, check the manual.

And don't forget the audio! If you have an A/V receiver, run either an optical or coaxial digital audio cable (depending on your equipment) from the cable box or satellite receiver to the A/V receiver for 5.1-channel surround sound. If you don't have an A/V receiver, connect the tuner and TV using standard analog stereo inputs and outputs. Note that in addition to the high-def video, the HDTV signal includes Dolby Digital audio — in 5.1 channels if that's how it was broadcast, or else in Dolby Digital stereo.

Most cable and satellite installations have to be done by professionals, because the set-top box will need to be configured and activated. With a satellite hookup, you'll also need an 18- to 20-inch dish to receive HDTV. If you already have satellite service, you'll at least need a new receiver. With DirecTV, you'll also need a larger, elliptical dish. Most people can handle hooking up an off-air antenna, but placing an outdoor antenna on the roof or a tall mast might require a professional.

### **The Finishing Touches**

Ready to sit back and watch your favorite team in all its high-def glory? Not so fast. Like all TVs, your new HDTV will require a firsttime setup, using the remote control and onscreen menus, to set audio output options and other functions like channel scan and off-air antenna or cable tuning.



**Most HDTVs have a widescreen 16:9 aspect ratio. To accommodate traditional 4:3 aspect ratio broadcasts, most models place gray bars to the sides of the image.**

It will also need to be calibrated to perform at its best. You can use DVDs like the [Sound & Vision Home Theater Tune-Up](#), the *Avia Guide to Home Theater*, and *Digital Video Essentials* for this. I like the *Home Theater Tune-Up* disc (okay, I might be a little biased) because it's easy to use and contains essential test patterns and step-by-step instructions for adjusting color, brightness, contrast, and other critical picture settings. It also takes you through receiver and speaker setup and other necessities for getting peak performance from your entire home theater system.

Before settling into your favorite chair, there are a few other points to note. Make sure the aspect ratio of your DVD player and widescreen HDTV are both set to 16:9 (usually called "full mode" in the TV's setup menu) and not the squarish 4:3 aspect ratio, which is the typical default for DVD players. Otherwise, the set may stretch a 4:3 DVD image to fit the 16:9 screen — resulting in bloated bodies and egg-shaped wheels. This can also be a problem if you're using a progressive-scan player that doesn't have "aspect ratio control." The problem here is that some HDTVs "lock" into full mode when displaying a progressive-scan DVD. If you're watching a 4:3 program, it'll be stretched to fill the 16:9 screen, which looks pretty bad. But if your progressivescan player has aspect ratio control, it will send the TV a properly formatted picture.

There are a number of options for HDTV recording. As noted, some high-def cable boxes and satellite receivers have a built-in hard disk for recording in high-def. Other tuners, and some HDTVs, have FireWire (a.k.a. IEEE 1394 or i.Link) jacks for feeding a high-def signal to a digital D-VHS VCR for recording and playing back HDTV broadcasts on D-VHS tape. (D-VHS VCRs can also record and play analog video on D-VHS, S-VHS, and VHS tape.) HD tuners also send downconverted versions of highdef programs to their analog composite/S-video and stereo audio outputs so you can make standard recordings on your VCR or DVD recorder.

*Now* you're ready to enjoy all the thrills and splendor of HDTV, experiencing favorite TV shows, sports, and movies as never before. In fact, after just a few minutes in front of your new highdef set, you'll know what millions of viewers already do — once you've seen HDTV, there's no turning back.