



An Extended Guide · No. 1981

Audio Cables Untangled — Optical, RCA & the Headphone Jack

A picture-and-plain-words
guide to hooking up your sound

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Let's get the sound flowing again

If you've ever stood behind a TV or a stereo, holding a cable and staring at a row of little holes, trying to work out which one it goes in — you are in very good company. This guide helps you match the right audio cable to the jacks on your gear, calmly and without the jargon.

I'm Bill, and I run Bill's Home Tech here in Portage County, Ohio. I've spent 30+ years helping folks get comfortable with the gear in their homes. Getting sound from one box to another is one of the most common calls I get, and it's almost always simpler than it looks once you can name the pieces.

There are only a handful of audio connectors you'll meet day to day. Each one has a shape and often a color that gives it away. Once you can recognize them by sight, matching a cable to a TV, soundbar, stereo, or computer stops being a guessing game.

★ You don't need to memorize a thing

By the end of this you'll know the common sound connectors on sight. If you'd rather just have a second pair of eyes, send me a photo of the back of your gear — call or text (330) 200-8042 and I'll tell you exactly which cable you need, free.

The whole guide, on one page

If you remember only these things, you're already most of the way to getting your sound hooked up.

- ❑ Match the cable to the jacks your devices actually have — look at both ends of the trip.
- ❑ The **3.5mm headphone jack** is the small round hole on a TV, computer, or phone that a headphone plug slides into.
- ❑ **RCA** plugs are the color-coded pairs — red and white for sound, and sometimes a yellow one for old video.
- ❑ **Optical** (also called Toslink) has a little square plug and sometimes a faint red glow at the tip.
- ❑ **HDMI** now carries sound too — look for a port marked ARC or eARC. More on that in our HDMI-cables guide.
- ❑ A device often offers more than one option, so you can usually pick the one that matches what you already have.

✓ One habit that saves you

Before you buy anything, take a clear photo of the back of each device. With both sets of jacks in front of you, picking the right cable takes seconds instead of a frustrating afternoon.

Why are there so many kinds of audio cable?

It helps to know this isn't your imagination — sound connectors really did pile up over the years, and for understandable reasons.

For decades, sound traveled over simple analog cables — the red-and-white RCA pairs you'll still find on many stereos. Then digital connections arrived, first optical, and later sound riding along the same HDMI cable that carries the picture. Each new way stuck around, so most homes now have a mix of old and new jacks under one roof.

That's why the back of a TV or soundbar can look so busy. The good news is you don't need all of them — you just need one good connection between the two boxes you're joining. Most of this guide is about finding that one match.

✓ The jack decides, not the cable

Start with the holes on your gear, not the cable in your hand. The jacks each device has tell you which connection is even possible. Once you know that, the right cable almost picks itself.

The 3.5mm headphone jack — the small round hole

Start with the one you already know, even if you never knew its name. It's the little round hole your headphones plug into.

The headphone jack is a small round hole, about the size of a pencil tip, usually black. Its matching plug is a slim round metal pin with a couple of dark bands around it. You'll find this jack on many TVs, on computers and laptops, on older phones and tablets, and on lots of portable speakers and radios.

People call it a few things — the headphone jack, the 3.5mm jack, the aux jack, or the mini-jack — but it's all the same round connector. On a computer it's often marked with a tiny headphone picture; a nearby pink or red hole is usually for a microphone, so aim for the headphone one.

✓ Push until it clicks home

A headphone plug should slide all the way in with a gentle, firm push — you often feel a soft click. If sound is crackly or only comes from one side, the plug may not be seated fully, or there may be a bit of lint in the hole.

RCA — the red-and-white (and sometimes yellow) plugs

These are the color-coded cousins you'll find on most stereos and a great many older TVs and players.

RCA plugs are round metal tips surrounded by a plastic collar, and they come color-coded so you can't easily get them wrong. For sound, there's a pair: **red** for the right channel and **white** (sometimes black) for the left. You push each plug onto a matching colored jack that sticks out a little from the gear.

You'll often see a third plug in the bunch — a **yellow** one. That yellow plug is for old-style video, not sound, so for an audio-only hookup you use just the red and white pair and leave the yellow one unplugged. Match color to color and you're done: red to red, white to white.

✓ Color in, color out

The colors are there to guide you — plug each one into the jack of the same color, on both devices. If a device has a row labeled 'OUT' and another labeled 'IN', sound leaves from OUT on one box and goes into IN on the other.

Optical (Toslink) — the little square plug that glows

This one is digital, and it has a couple of giveaways that make it easy to spot once you know what to look for.

An optical cable carries sound as light rather than electricity. The plug is a distinctive little square with a narrow slot, and the port on the gear often has a tiny plastic flap or a dust cap over it. Many devices label the port 'OPTICAL', 'DIGITAL AUDIO', or 'TOSLINK' — all names for the same thing.

Here's the fun tell: if you look at the tip of an optical cable in a dim room, you'll often see a faint **red glow** — that's the light carrying your sound. The plug only fits one way, matching that square shape, so line it up gently rather than forcing it.

! Handle the tip with care

The glowing end is a little glass or plastic window, and it can be scratched or snapped if you bend the cable hard right at the plug. Pull it straight out by the plug, never by the cord, and don't kink it against a wall.

HDMI — the one cable that now carries sound too

Here's a newer twist that trips up a lot of folks: the same HDMI cable that carries your picture can carry the sound as well.

HDMI is the flat, wide plug with a gently tapered shape that connects a TV to a cable box, player, or game console. On most newer TVs and soundbars, one of the HDMI ports is marked **ARC** or **eARC** — that's the port that sends the TV's sound back out to a soundbar over a single cable, no separate audio cable needed.

If both your TV and your soundbar have a port marked ARC or eARC, that's often the simplest, best-sounding hookup there is — one cable does picture and sound. We cover the HDMI connector itself, the cable types, and ARC in more detail in our HDMI-cables guide.

✓ Look for the ARC label

ARC stands for Audio Return Channel — you don't need to remember that, just look for the letters printed by one HDMI port on each device. Plug the cable into the ARC port on both the TV and the soundbar for it to work.

The sound connectors, side by side

Here's the whole cast on one page. Keep this handy when you're peering behind the TV — there's a picture version near the back, too.

Connector	What it looks like	Where you'll find it
Headphone	Small round hole	TVs, computers, speakers
RCA	Red and white tips	Stereos, older players
Optical	Square plug, red glow	TVs, soundbars, players
HDMI (ARC)	Flat wide plug	Newer TVs and soundbars

Most hookups are just a matter of finding one connector that both devices share. If a TV and a soundbar both have optical, use optical; if both have an ARC port, HDMI is often the nicest choice.

★ **Print this page, tape it behind the TV**

A lot of folks tape a little chart like this to the wall behind the TV stand. It turns 'which hole was it?' into a five-second glance. If you'd like, I'll help you make one on a visit.

Two kinds of households, two sets of needs

Matching audio cables feels different depending on your gear. The job is the same, but where you start isn't.

If it's a simple TV-and-soundbar setup

You have a fairly recent TV and a soundbar you want to hear the TV through. Your goal is one clean connection and a picture that stays in sync with the sound.

- Check both the TV and the soundbar for an HDMI port marked ARC or eARC.
- If both have ARC, one HDMI cable between those ports is usually best.
- No ARC? Look for a matching optical port on both and use optical instead.
- A headphone or RCA jack is a fine fallback if that's all the two share.

If it's an older stereo with RCA gear

You have a receiver or amplifier and speakers from the analog era, maybe a turntable or CD player. Your goal is to get each source feeding the right colored jacks without a muddle.

- Work one source at a time: red to red, white to white, OUT to IN.
- Sound leaves a player's OUT jacks and goes into the receiver's IN jacks.
- Label each cable pair at the receiver so you know which input is which.
- If a newer device has only optical or HDMI, see the converter note inside.

★ Not sure which jacks your gear has?

This is a perfect kitchen-table job. Send me a photo of the back of each box, or have me out, and I'll name every jack, match it to the right cable, and get your sound flowing in one calm sitting. Call (330) 200-8042.

Matching the cable to the jacks you actually have

This is the heart of it, so let's make it plain. You're building one bridge between two boxes, and the jacks on those boxes decide which bridge you can build.

Look at the back of the first device and write down the sound jacks it offers — maybe a headphone hole, a red-and-white RCA pair, an optical port, an HDMI ARC port, or several of these. Then do the same for the second device. The connection you want is one that both devices share.

Many devices offer more than one option on purpose, so you often get to choose. When you have a choice, HDMI with ARC or optical tends to sound best between newer gear, while RCA or the headphone jack happily link up older equipment. There's no wrong choice if both ends match.

★ Bring me the back panel, not just the cable

If you're unsure what a box needs, the box itself has the answer in its row of jacks. Show me the back panels of both devices and I'll match them to the right single cable every time — and label it so you never wonder again. Call (330) 200-8042.

Analog and digital, in plain words

You'll hear these two words thrown around. You don't need the technical side — just enough to know why some cables don't mix.

Think of **analog** as sound sent the old-fashioned way, as a simple electrical signal. The headphone jack and the red-and-white RCA pair are analog. Think of **digital** as sound sent as a stream of computer code, which many people feel is cleaner. Optical and HDMI carry sound digitally.

The reason this matters is simple: an analog jack and a digital jack speak different languages. You can't just join an optical port to an RCA pair with a plain cable and adapter — the signal has to be translated first. We cover that little translator box a few pages on.

✓ Same family connects easily

Analog-to-analog (headphone or RCA on both ends) and digital-to-digital (optical or HDMI on both ends) are straightforward. It's only when you try to cross between the two families that you need a converter.

Reading the little labels on the back panel

The writing back there is small and the light is usually bad, but a few words are worth knowing so you aim for the right hole.

- **OUT** means sound leaves here; **IN** means sound comes in here. Join an OUT to an IN.
- **AUDIO OUT** or **AUX** on a TV usually feeds a soundbar, headphones, or an older stereo.
- **OPTICAL**, **DIGITAL AUDIO**, or **TOSLINK** all name the same square optical port.
- **ARC** or **eARC** printed by one HDMI port marks the one that carries sound back to a soundbar.
- **L** and **R** with the white and red RCA jacks mean left and right — match white to L, red to R.

✓ A phone is a flashlight and a magnifier

Turn on your phone's flashlight to light up the back panel, then snap a photo and pinch to zoom in. The tiny labels jump right out, no crouching in the dark or reading glasses needed.

Hooking up a soundbar to the TV

A soundbar is the most common reason folks call me about audio cables, so let's walk the usual path from best option to simplest.

First choice: if both the TV and the soundbar have an HDMI port marked ARC or eARC, run one HDMI cable between those two ports. That single cable lets the TV send its sound to the soundbar, and it's usually the best-sounding, tidiest way to do it.

No ARC port on one of them? Then look for a matching optical port on both and use an optical cable instead — also excellent. If neither of those lines up, a headphone-style or RCA connection from the TV's audio output will still get the job done. Pick the best match the two devices share.

✓ Then set the TV to use it

After the cable's in, you often have to tell the TV to send sound to the soundbar — look in the TV's sound menu for an option like 'audio output' and choose the soundbar, ARC, or optical. The cable alone sometimes isn't the whole job.

Connecting an older stereo with RCA jacks

If your heart is in a classic receiver and a good pair of speakers, RCA is your friend — and it's wonderfully logical once you see the pattern.

Each source — a CD player, a tape deck, a turntable — sends sound out of its red-and-white OUT jacks. A matching cable carries that to one of the labeled IN rows on your receiver, such as 'CD' or 'AUX'. Red to red, white to white, OUT to IN. Then you select that input on the receiver to hear it.

Turntables can be a special case: some need a receiver input labeled 'PHONO', while others have a little switch or a built-in step so they can use a regular 'AUX' input. If a record player sounds very faint and tinny, that's usually the clue it's in the wrong kind of input.

✓ One source at a time

Hook up and test one device before moving to the next, and the whole thing stays simple. Labeling each cable pair where it meets the receiver means you can always trace which input belongs to which box.

Headphones, and sound on a computer

The round headphone jack shows up on TVs and computers too, and it's handy for private listening or feeding a small speaker.

On a TV, a headphone jack lets one person listen without disturbing the room — a real blessing in a shared home. Plug in headphones and the TV's speakers often go quiet automatically. The same round jack can feed a small powered speaker using a cable with a headphone plug on each end.

On a computer, aim for the hole marked with the little headphone picture; a pink or red hole nearby is for a microphone. Many newer laptops have dropped the headphone jack entirely in favor of USB-C or wireless, which we touch on in our guide on telling cables apart.

! Mind the volume before you plug in

Headphones sit right against your ears, so turn the volume down before you put them on, then bring it up gently. A sudden blast at full volume is unpleasant and, over time, hard on your hearing.

The mix-ups I see most often

A few honest mistakes account for most audio trouble. Knowing them ahead of time means you'll breeze right past them.

- **Plugging into IN instead of OUT:** sound has to leave an OUT jack and arrive at an IN jack — mixing them up means silence.
- **Using the yellow RCA plug for sound:** yellow is old video; sound rides the red and white pair only.
- **Any old HDMI port for a soundbar:** only the port marked ARC or eARC sends sound back out to the soundbar.
- **Expecting an adapter to join optical and RCA:** digital and analog need a real converter box, not a simple plug.
- **Forgetting the TV's sound menu:** the cable is only half the job — the TV often has to be told to use it.

! Never force a plug

If a plug doesn't seat with gentle pressure, something's off — it's the wrong shape, upside down, or there's lint in the hole. Optical and headphone tips in particular can be damaged by forcing. Stop, look, and line it up.

No sound? A calm, orderly check

When the picture's fine but there's no sound, it's rarely the mystery it feels like. A patient check in order usually finds it fast.

Start with the obvious: is anything muted, and is the volume up on both the TV and the soundbar or stereo? Then check the cable is pushed fully into the right jacks at both ends — an OUT feeding an IN, colors matched. A half-seated plug is a very common cause.

Still quiet? Check the TV or device's sound menu is set to the output you wired up, such as the soundbar, ARC, or optical. If it still won't play, try a different cable you know is good to rule the cable out. Change one thing at a time so you know what fixed it.

✓ Keep one cable you trust

Set aside one audio cable of each type you use and label it 'test.' When sound drops out, swapping in a known-good cable is the quickest way to tell a bad cable from a settings problem.

Adapters, and the converter box that bridges two worlds

Sometimes the jacks on your two devices simply don't match. A small adapter or converter can bridge the gap — but it pays to know which kind you need.

Within the same family, a simple adapter is fine: a little plug that turns a headphone connector into an RCA pair, for instance, because both are analog. These are inexpensive and pocket-sized, and one or two can rescue a lot of odd moments between older gear.

Crossing between digital and analog — say, optical out of a new TV into the RCA jacks of an old receiver — needs a small powered **converter box**, not just a cable. It translates the signal and usually takes its own little power supply. The box or listing will say which direction it converts, so read that carefully before you buy.

✓ Check the direction and the family

A converter works one way, either digital-to-analog or analog-to-digital, so match it to your actual need. If both your devices are in the same family, skip the box — a plain cable or simple adapter is all you need.

Caring for audio cables and buying without overpaying

Audio cables are among the longest-lived in the house. A little care and a sensible purchase go a long way.

Like any cable, these die at the ends where they bend most. Pull by the plug, never the cord, give the optical tip an especially gentle hand, and leave a loose loop for storage rather than a tight, kinking wrap. A cord crushed under furniture takes hidden damage.

When you buy, nail down both ends first — the exact jacks on each device — and the right length with a little slack. For everyday home use, a sturdy cable from a reputable maker is plenty; you rarely need a fancy, pricey one to join a TV and a soundbar. Spend on good build, not on the name.

★ Text me the two back panels before you buy

Snap a photo of the jacks on both devices and I'll tell you exactly which cable and what length to get — so you order once and it just works. No commission, just a straight answer. Call or text (330) 200-8042.

Your quick reference, start to finish

The short version you can lean on any time the sound has you stumped.

- ❑ List the sound jacks on both devices — then find one they share.
- ❑ Headphone jack = small round hole; RCA = red-and-white tips.
- ❑ Optical = square plug with a faint red glow; HDMI ARC carries sound too.
- ❑ Join an OUT to an IN; match RCA colors, red to red and white to white.
- ❑ Same family connects simply; crossing digital and analog needs a converter.
- ❑ After wiring, set the TV or device to use that output.
- ❑ No sound? Check mute, volume, seating, and the output setting, in order.

★ Keep this guide behind the TV

You don't have to hold any of this in your head. Keep these pages with your gear, and when in doubt, I'm a phone call away at (330) 200-8042.

Common Questions

The questions I hear most about audio cables, answered plainly.

Q: How do I get my TV's sound to play through my soundbar?

Look for an HDMI port marked ARC or eARC on both — one HDMI cable between those is usually best. No ARC? Use optical if both have it, or a headphone or RCA connection. Then set the TV's sound menu to that output.

Q: What are the red and white plugs for?

That's RCA, an analog audio pair: red is the right channel, white is the left. You'll see them on stereos and older players. A yellow plug in the bunch is for old-style video, not sound, so leave it out for an audio-only hookup.

Q: What is that cable with the little square plug that glows?

That's an optical cable, also called Toslink. It carries sound as light, which is why the tip can glow faintly red. Its square plug fits an optical or digital-audio port on TVs, soundbars, and players.

Q: Can I connect my new TV's optical output to my old stereo's RCA jacks?

Not with a plain cable — optical is digital and RCA is analog, so they speak different languages. You need a small powered converter box that translates digital to analog. Check that it converts in that direction before buying.

Q: I plugged everything in but there's still no sound — why?

Usually it's mute or low volume, a plug not pushed fully home, or the device still set to its own speakers. Check those, make sure an OUT feeds an IN, and set the TV's sound menu to the output you wired up.

★ Still staring at a row of little holes?

Sorting out audio hookups is one of my favorite quick jobs — satisfying, and it brings a room back to life. Call or text (330) 200-8042 and we'll get your sound flowing.

You don't have to do this alone

You just have to remember that a friendly, patient person is one call away.

I hope this guide made matching your audio cables feel a little less daunting and a lot more doable. Keep it in a drawer with your other home papers, come back to a page whenever you need it, and don't worry about memorizing anything.

When you'd rather have a hand, that's exactly what I do. I come to your home, work at your pace, and never make you feel rushed or silly for asking. A first visit is a flat \$99, and for the parts that don't need me on-site I can often help right on your screen for \$49. Every visit comes with a 30-day, come-back-free guarantee. I don't do licensed electrical, gas, or appliance-repair work myself — for that I'll help you line up a trustworthy local pro.

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The Sound Connectors You'll Meet

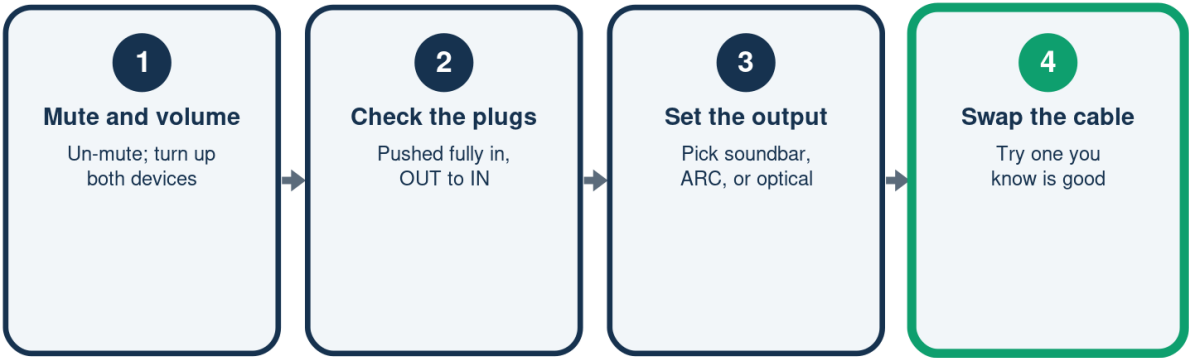
Learn these by shape and color and the back panel stops being a mystery

	What it looks like	Where it goes
Headphone	Small round hole	TVs, computers
RCA	Red-and-white tips	Stereos, players
Optical	Square plug, glows	TVs, soundbars
HDMI (ARC)	Flat wide plug	Newer TVs, bars

Find one connector both devices share -- that's your cable.

No Sound? Check in This Order

A calm path that finds the trouble fast



Change one thing at a time so you know what fixed it.

Analog or Digital?

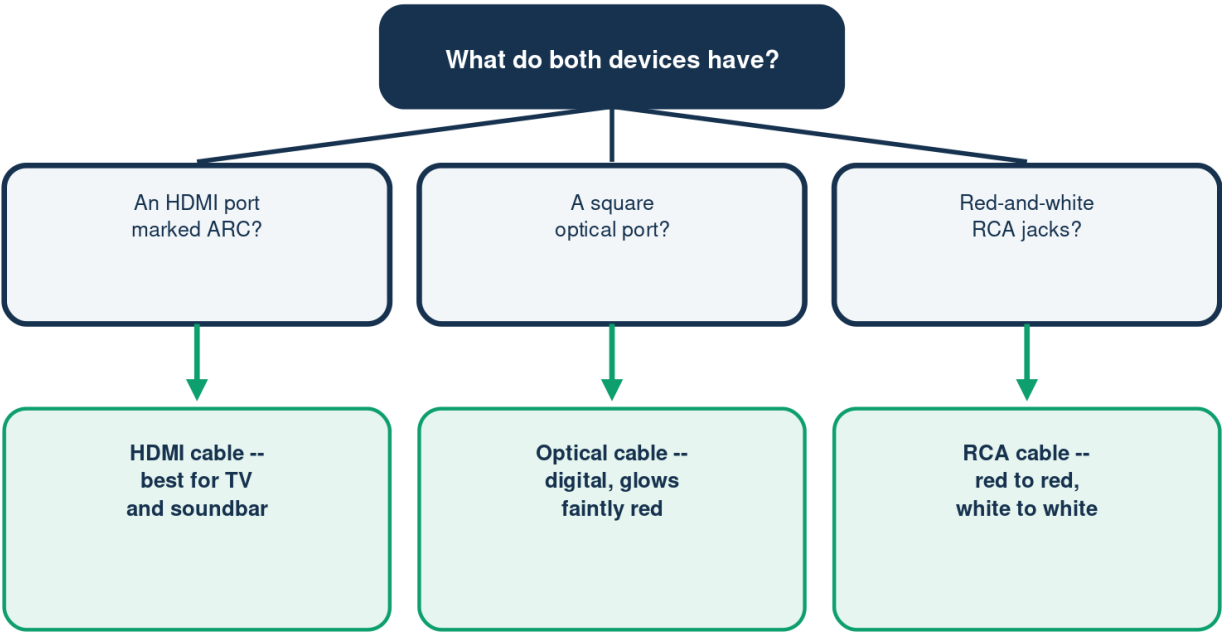
Why some connections need a converter

	Analog	Digital
Connectors	Headphone, RCA	Optical, HDMI
Sent as	Electrical signal	Computer code
Found on	Older stereos	Newer gear
To cross over	Converter box	Converter box

Same family joins simply; crossing families needs a converter.

Which Audio Cable Do I Need?

Work from the jacks both devices share



Crossing digital and analog needs a converter box, not a plain cable.

Illustration - a schematic, not to scale. Your setup may differ.



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A Note From Bill

A quick note from Bill.

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