



An Extended Guide · No. 1750

Protecting Your HVAC, Furnace, and Central Air

The costly, hardwired
systems that need the panel

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! Read this first — two kinds of protection, one safety rule

There are two kinds of surge protection in this guide, and they are not the same job. A whole-home surge protector wires into your electrical panel, where the power is always live and a mistake can be deadly — that is strictly a licensed electrician's work, almost always with a permit, and never a do-it-yourself project. (It isn't something I do myself, either; I help you understand it, choose wisely, and line up a trustworthy local pro.) The other kind — the surge-protector strips and plug-in units you use at the wall — are perfectly safe for you to set up on your own. One honest note either way: no surge protector is a lightning rod or an iron-clad guarantee, so in a violent electrical storm, unplugging a treasured device is still the surest protection of all. This guide is about your furnace, central air, and heat pump — and because they're wired straight into your home, they are the textbook case for a whole-home protector at the panel, which is licensed-electrician work, not a plug-in strip and never a do-it-yourself job.

The costly systems that keep you comfortable

Your furnace and central air are among the most expensive systems in your whole home — and they've quietly turned into sensitive electronics. Let's talk about keeping them safe from surges, in plain English.

I'm Bill, and I run Bill's Home Tech here in Portage County, Ohio. In 30-plus years of helping folks with the technology in their homes, I've watched furnaces and air conditioners fill up with circuit boards — control boards, variable-speed motors, smart thermostats. They run better and cost more, and a surge can take one out in an instant.

Here's the thing that makes HVAC special: these systems are wired straight into your home, with no plug to slip a strip in front of. That's exactly why they're the classic reason to have a whole-home protector at the panel — and why this is an electrician's job, not yours or mine.

★ There's no silly question here

If any of this feels over your head, it isn't — it's just new. Call or text me at (330) 200-8042 and I'll explain it as many times as it takes, free and with nothing to sell you.

The whole guide, on one page

If you take away only these points, you understand HVAC surge protection well enough to make a good decision.

- ❑ Furnaces and central AC are expensive, and they're now full of circuit boards that a surge can ruin.
- ❑ They're hardwired — wired straight into your home — so a plug-in strip can't reach them at all.
- ❑ That makes them the textbook case for a whole-home surge protector at the panel: your first line of defense.
- ❑ An electrician can also add a dedicated protector right at the HVAC unit or its disconnect, for extra protection close to the equipment.
- ❑ All of this is a licensed electrician's job, almost always with a permit. It is never a do-it-yourself project.
- ❑ The AC compressor cycling also causes small surges of its own — one more reason steady, always-on protection is worth it.

! The one hard rule

Never open your electrical panel or your HVAC wiring yourself. The power there stays live and a mistake can be deadly. Protecting these systems is electrician's work, full stop.

Why HVAC is the big one

Of everything a surge can damage in your home, your heating and cooling system is often the most painful to lose.

A furnace or central air system is a major investment, and today it's run by electronics as much as by motors and coils. A modern furnace has a control board that manages the whole cycle, and many have variable-speed blowers with their own electronic brains. A surge that would have meant nothing decades ago can now fry that board and leave the system dead.

And the sting isn't just the repair bill. A dead furnace in January or a dead air conditioner in a July heat wave is a comfort-and-safety problem, not just a money one. That's what makes protecting these systems worth a little planning.

✓ **Expensive when it works, expensive when it doesn't**

The electronics that make a modern HVAC system efficient and quiet are also the parts a surge loves to ruin. Good protection is about avoiding a big, sudden repair on the system you can least do without.

The costly parts a surge can ruin

It helps to know which pieces are vulnerable, so you can see why protection is worth the trouble.

The parts most at risk are the ones with electronics inside. A plain old motor or a heating coil is fairly tough; it's the boards and the sensitive controls that a surge takes out.

The part	Why you'd care
Control board	The system's brain — costly
Blower motor	Pricey, often electronic
AC compressor	The big-ticket outdoor unit
Smart thermostat	Small, sensitive, wired in

✓ **One surge, one big bill**

With so much of a modern HVAC system riding on electronics, a single surge can turn into one of the larger repair bills a home ever sees. That's the quiet, expensive surprise good protection is meant to prevent.

Why a plug-in strip can't help here

This is the fact that decides everything about protecting your HVAC.

Your furnace and central air are **hardwired** — wired straight into your home's electrical system, with no plug and no outlet to work with. There's simply nowhere to put a plug-in surge strip. That's true of the furnace in the basement, the air handler, and the big compressor outside.

Because you can't reach them with a strip, the way to protect them is to stop surges further upstream — at the electrical panel, where all your home's power comes in. A **whole-home surge protector** there guards everything wired in, the furnace and AC included. It's your first line of defense, and for HVAC it's really the only plug-in-style option there is.

! That part is an electrician's job

A whole-home protector installs inside your live electrical panel, so it is strictly a licensed electrician's work, almost always with a permit — never a do-it-yourself project, and not something I do myself either. Our whole-home surge protection guide walks through exactly how it goes; here I'll point you to it and stay in my lane.

An extra guard right at the unit

Beyond the panel, there's a second, optional layer worth knowing about for your HVAC.

Out by your air conditioner you'll usually see a small box on the wall — that's the **disconnect**, a shutoff the technician uses when servicing the unit. A licensed electrician can fit a dedicated surge protector right there, or at the furnace itself, to add protection close to the expensive equipment.

Think of it as a bodyguard standing right next to the HVAC, on top of the gatekeeper at the panel. It's not something every home needs, but for a high-end system, or a home with a lot of surge exposure, it's a sensible question to ask your electrician about.

✓ Still not a DIY add-on

Even a protector at the unit means working in the equipment's wiring, so it's the electrician's job too. The good news is they can often fit it on the same visit as the panel unit.

Your air conditioner makes surges too

It's not only the target of surges — your central air is also a busy little source of them.

That big outdoor compressor draws a hefty jolt of power each time it kicks on to cool the house, and it cycles on and off all summer long. Like the refrigerator and the well pump, it sends a small spike back into your wiring every time — one more of the everyday, inside-the-home surges that quietly wear on electronics.

So a whole-home protector at the panel does double duty for your HVAC: it shields the furnace and AC from big incoming surges, and it sits right where the compressor's own spikes pass through. Our kitchen-and-laundry guide and our guide on surges from inside your home tell more of that story.

✓ Summer and winter both

The AC's spikes in July and the furnace blower's in January mean your HVAC is nudging your home's electronics nearly year-round. Steady, always-on protection is the answer.

What about the smart thermostat?

The thermostat is small, but it's a sensitive little computer these days, and folks often ask how to protect it.

Your thermostat is wired to the furnace on thin low-voltage wires, so it draws its power and its signals from the heating system itself. That means the surest way to protect it is to protect the system it's tied to — which a whole-home protector at the panel does. There's no plug behind it to add a strip to.

If your thermostat also connects to your home WiFi so you can run it from a phone, then it leans on your router and modem too. Guarding that network gear with a plug-in protector is worth doing — our guide on choosing a protector covers the sensitive network side.

✓ One less thing to fuss over

You don't need a special gadget for the thermostat. Protect the furnace it's wired to, and protect the network it talks to, and the thermostat is looked after.

Why this is never a do-it-yourself job

I want to be clear and caring about this, because it's the heart of the whole guide.

Protecting your HVAC means working at the electrical panel, or right at the equipment's wiring — places where the power is live and unforgiving. A whole-home protector wires into your panel among conductors that stay energized even with the main breaker off. A protector at the furnace or the AC disconnect means opening up equipment wiring. Neither is a homeowner job.

There's the legal side too: panel work almost always needs a permit and an inspection, and a botched install can void your equipment warranty or your homeowner's insurance. A licensed electrician handles all of that as a matter of course. Our whole-home guide explains why the permit is actually on your side.

! Live wires don't forgive mistakes

Please don't take this one on to save a little money. The panel and the HVAC wiring are exactly the places where a mistake turns dangerous. This is licensed-electrician work, full stop — and it isn't something I do myself either; I line you up with a good one.

Two kinds of homes, two sets of needs

A furnace and central air are worth protecting anywhere, but the stakes climb the more you rely on them and the more exposed your home is.

If you live in town or the suburbs

In town and the suburbs, your service lines are often shorter and sometimes buried, which gives lightning fewer places to jump aboard. Your furnace and AC are still hardwired and full of costly boards, though, and help is usually close by if the heat quits.

- Your furnace and AC are hardwired and full of costly boards — a whole-home unit guards them.
- Shorter, sometimes-buried lines mean somewhat less lightning exposure, but grid surges still reach you.
- An electrician can add a protector right at the unit for a little extra peace of mind.
- A short outage is an inconvenience; the surge when power returns is the real threat to the electronics.

If you are out in the country on a well

Out in the country, long overhead power lines cross open land for miles, giving nearby lightning far more chances to jump aboard. Outages last longer, and in a hard winter a dead furnace is a serious matter, not just an inconvenience.

- Long overhead lines mean more lightning exposure reaching your furnace and AC.
- A winter outage lasts longer out here, and a dead furnace in a cold snap is genuinely dangerous.
- Pair surge protection with a backup-power plan for the furnace — see the generator and backup-power guides.
- Ask the electrician about a whole-home unit plus a protector right at the HVAC equipment.

★ Rely on your furnace? Let's make it solid

Between surge protection and a backup-power plan, there's a sensible setup for your home and your budget. Tell me how your power behaves in a storm and I'll help you weigh it. Call (330) 200-8042.

When the heat is more than a comfort

For some homes, and in an Ohio winter especially, the furnace isn't a luxury — it's what keeps the pipes from freezing and the household safe.

If you're out in the country, a winter outage can run a good long while, and a dead furnace in a cold snap is a real problem. Surge protection is one piece of keeping that furnace healthy — but it isn't the whole picture. A surge protector guards against spikes; it does nothing to keep the furnace running when the power is simply out.

That's where backup power comes in. Pairing a whole-home surge protector with a plan for backup power — a generator sized to run the furnace, safely hooked up through a transfer switch — is the real peace of mind. Our generator and backup-power guides walk through doing that safely.

✓ Think of it as two separate jobs

Surge protection keeps the furnace's electronics from being fried; backup power keeps it running when the grid goes down. You want both, and I'm glad to help you sort out the plan for your home.

What to ask your electrician

You don't shop for this the way you'd grab a power strip. You choose a good electrician and ask good questions.

- **Is the unit UL listed?** Look for equipment that meets the recognized safety standard — UL 1449 is the one for surge devices.
- **A whole-home unit at the panel** to guard the furnace, AC, and everything else wired in — the first line of defense.
- **A protector at the HVAC unit or its disconnect?** Ask whether a dedicated one close to the equipment is worth it for your home.
- **Will you pull the permit and handle inspection?** A good pro says yes without hesitation.
- **An indicator I can check**, plus a quick lesson on what a healthy light looks like.

★ I'll help you ask

If talking specs with an electrician feels daunting, that's exactly what I can sit in on. I'll help you ask the right questions and understand the answers, so you feel in control of the decision. Call (330) 200-8042.

How the layers team up for your HVAC

The panel unit and an at-the-unit protector aren't rivals — they're teammates, each covering what the other can't.

The whole-home protector takes the first, biggest hit right at the door, knocking a dangerous surge down to a survivable size before it can reach the furnace or AC. A dedicated protector at the unit, if you add one, gives the expensive equipment a second layer of protection close by.

And the whole-home unit quietly backs up every plug-in protector elsewhere in the house at the same time — the TV, the computer, the network gear. That's what the pros mean by layered protection, and it's why I recommend building it up over time. Our layered-protection guide lays out the whole idea.

✓ You don't have to do it all at once

A whole-home unit first, then a protector at the HVAC if it makes sense for your home. Even one layer beats none, and the layers together are strong.

After a storm or a surge — checking your system

If a surge may have come through, a quick check tells you whether your HVAC came out all right.

- The furnace or AC won't start, or starts and quickly quits, right after a storm or a flicker.
- The thermostat is blank, frozen, or showing an error code it didn't before.
- The system runs but behaves oddly — short-cycling, odd noises, or the fan won't stop.
- Any burnt or electrical smell from the furnace, the outdoor unit, or the panel — treat this seriously.

! A burnt smell means stop

If you ever smell burning or something electrical from the furnace, the AC, an outlet, or the panel, don't keep running the system — shut it off at the thermostat if you safely can and call a licensed electrician or HVAC technician. Anything scorched or hot is a stop-and-call moment.

Simple habits that help

A few easy habits stretch the value of whatever protection you have. None of them cost a thing.

- ❑ After a big storm season, glance at your whole-home unit's indicator light — ask your electrician to show you where it is.
- ❑ During a long outage, remember the surge often comes when power returns; let things settle before leaning on the system hard.
- ❑ Keep up regular HVAC maintenance — a technician may spot a scorched or loose connection before it becomes trouble.
- ❑ If you have a plug-in protector on any network gear your thermostat uses, check its light now and then too.
- ❑ Tie the whole-home unit check to changing the furnace filter, so it's never a separate thing to remember.

✓ Snap a photo when it's new

When your whole-home unit is freshly installed and its light is healthy, take a phone photo. Then if you ever wonder whether it looks different, you've got a known-good picture to compare against.

Common mistakes to avoid

A handful of missteps come up again and again. Here's how to steer clear.

- **Assuming HVAC can't be protected** because you can't plug a strip into it — the panel unit reaches it just fine.
- **Trying to install a protector yourself** at the panel or the unit — dangerous, and it can void warranties and insurance.
- **Skipping the permit**, or hiring someone who offers to. On panel work, the inspection is your friend.
- **Protecting the TV but not the furnace** — the pricey hardwired systems are exactly what a whole-home unit is for.
- **Forgetting backup power** where a working furnace is critical — surge protection and backup power are two different jobs.

! Cheap the wrong way

The two tempting shortcuts here — doing panel or unit wiring yourself and skipping the permit — are the two you most want to avoid. With your costliest systems and live wiring involved, this isn't the place to cut corners.

A few myths, cleared up

HVAC surge protection collects some misunderstandings. Let's set them straight.

Q: 'My furnace is just motors — a surge can't hurt it.'

Not anymore. A modern furnace runs on a control board, and many have electronic variable-speed blowers. Those are exactly what a surge ruins.

Q: 'There's no way to surge-protect something hardwired.'

There is — you just do it upstream. A whole-home protector at the panel guards everything wired in, the furnace and AC included.

Q: 'A whole-home unit is a big, disruptive project.'

Usually not. For most homes it's a modest, one-time job — our whole-home guide covers what to expect on install day.

Q: 'If I have surge protection, my furnace will run through an outage.'

No — those are two different jobs. A surge protector stops spikes; keeping the furnace running when the power's out takes backup power.

✓ When in doubt, ask

If any of these surprised you, good — that's the point. Call me and I'll set any of them straight, free, with nothing to sell you.

A sensible plan, in order

You don't need to do everything at once. Here's a calm order that makes sense for most homes.

First, ask a licensed electrician about a whole-home protector at the panel. For HVAC it's the foundation — the one thing that reaches your hardwired furnace and AC, and it backs up your plug-in protectors everywhere else at the same time.

Then, depending on your home and how exposed it is, consider a dedicated protector right at the HVAC unit, and — if a working furnace is critical for you — a backup-power plan alongside it. There's no rush; build the layers up as your budget allows.

★ A plan that fits your budget

Tell me about your home, your heating, and how your power behaves, and I'll help you put things in a sensible order — starting with what matters most. Call or text (330) 200-8042.

Panel unit and unit protector, at a glance

Here are the two places an electrician can protect your HVAC, side by side.

Question	At the panel	At the unit
Who installs it	An electrician	An electrician
What it covers	The whole house	Just the HVAC
How common	The usual first step	An optional extra
Needs a permit	Almost always	Ask your electrician

✓ **Start at the panel**

For most homes the whole-home unit at the panel is the sensible first step; a protector at the unit is a nice extra layer for a high-end system or a very exposed home. Your electrician can advise.

How I can help

This is a perfect example of where a patient helper who isn't trying to sell you anything makes life easier.

I don't do the panel or HVAC wiring myself — that's a licensed electrician's job, and I'll say so every time. What I do is help you understand whether a whole-home unit and an at-the-unit protector make sense for your home, get and compare fair quotes from trustworthy local pros, and translate the technical bits into plain English.

I'll also help with the parts that are mine to do — setting up plug-in protectors on the network gear your smart thermostat leans on, and helping you think through backup power if a working furnace is critical. It's the whole picture, sorted out with you.

★ Real help, close to home

A first in-home visit is a flat \$99, and I can often help over a screen-share for \$49. Every visit comes with a 30-day, come-back-free guarantee. Call or text (330) 200-8042, or visit BillsHomeTech.com.

Common Questions

The questions folks ask me most about protecting a furnace and central air, answered plainly.

Q: Can I put a surge protector on my furnace myself?

No — the furnace is hardwired, so there's no plug for a strip, and any protector for it is wired in at the panel or the unit. That's licensed electrician's work, not a homeowner job.

Q: Is a whole-home protector really necessary for HVAC?

It's the most sensible option, because it's the one plug-in-style protection that actually reaches your hardwired furnace and AC. For these systems, it's really the main way to guard them.

Q: What's the difference between the panel unit and one at the AC?

The panel unit guards your whole house, HVAC included, and is the usual first step. A protector at the unit adds a second layer of protection close to the equipment — an optional extra your electrician can advise on.

Q: Will surge protection keep my furnace running in an outage?

No — that's a different job. A surge protector stops spikes; keeping the furnace running when the power is out takes backup power. Our generator and backup-power guides cover that.

Q: Does my air conditioner cause surges?

Yes. The compressor draws a big jolt each time it cycles on, sending a small spike back into your wiring all summer — one more reason steady, whole-home protection is worth it.

★ Still have a question?

Ask away — there's no silly question here. Call or text me at (330) 200-8042 and I'll walk you through it as many times as you need.

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 protecting your HVAC, furnace, and central air 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.

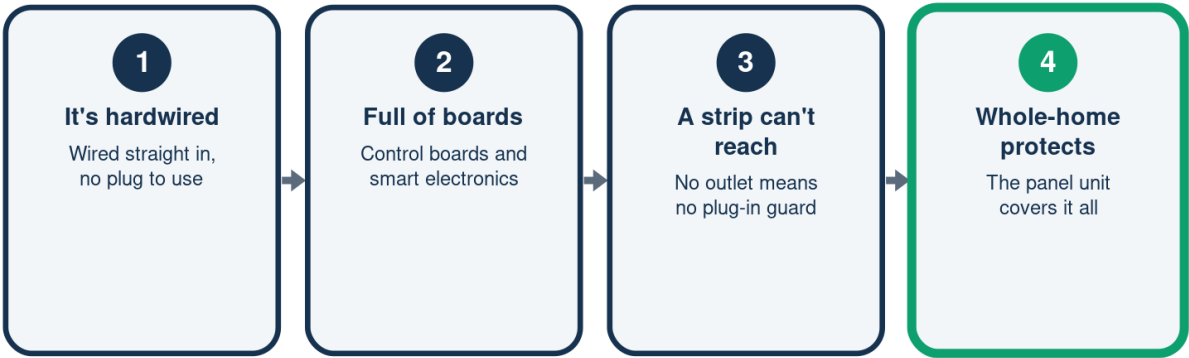
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Call or text me at (330) 200-8042, or visit BillsHomeTech.com. Serving Atwater and all of Portage County. 30+ years of patient, plain-English tech help — and if you're ever not 100% happy with a visit, I'll make it right or refund it. That's a promise. — Bill

Why HVAC Needs the Panel

Hardwired systems can't take a plug-in strip



For a hardwired furnace and AC, the panel unit is the way in.

The Costly Parts a Surge Can Ruin

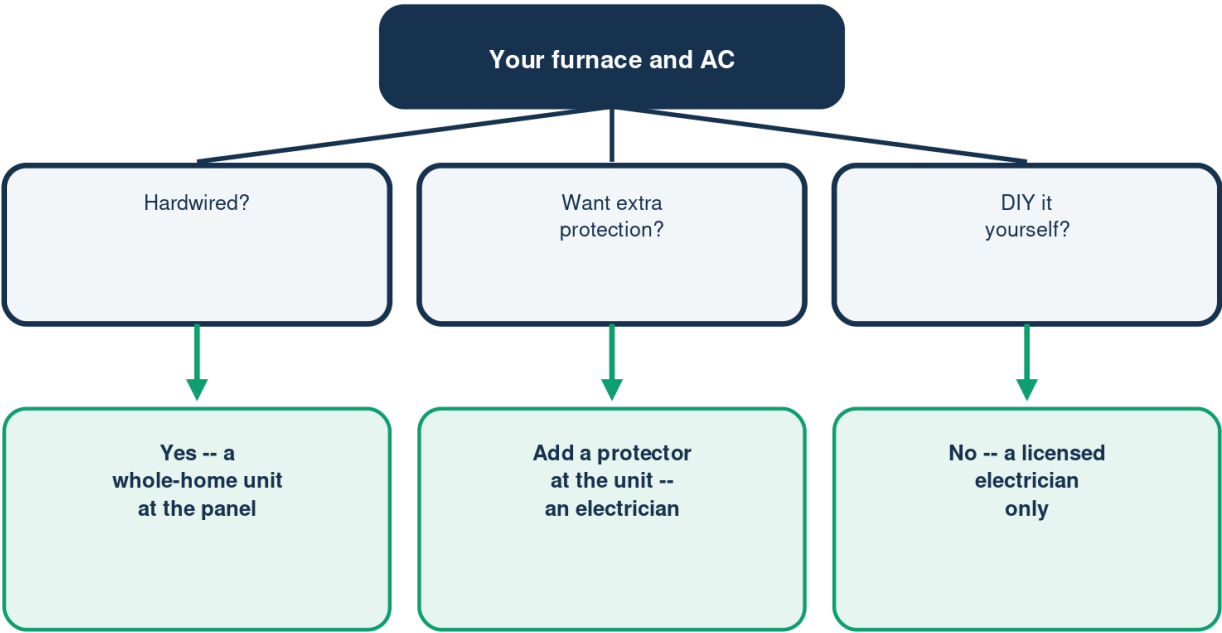
It's the electronics, not the plain motors

Why it matters	
Control board	Costly
Blower motor	Pricey
Thermostat	Sensitive
AC compressor	Expensive

The boards and sensitive controls are what a surge takes out.

Protecting Your Furnace and AC

The answers all point one way



Panel and HVAC wiring stay live and are dangerous. This is never a DIY job.

Every route to protecting HVAC runs through a licensed electrician.

Two Places to Protect HVAC

The panel unit first; a unit protector as an extra

	At the panel	At the unit
Who	Electrician	Electrician
Covers	Whole house	The HVAC
Common?	Yes	Optional

Start at the panel; add a unit protector for extra, close-in defense.



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A Note From Bill

A quick note from Bill.

I write these guides to make home tech a little less frustrating, and I do my best to keep every step accurate and up to date. Still, every home, device, and setup is a bit different, so I can't promise a guide will match yours exactly or fix your particular problem. These guides are for general information only — they're not professional, legal, or financial advice, and they don't replace your device's own manual or the manufacturer's instructions. Please go slow, use your own good judgment, and use everything here at your own risk. If a step involves electrical wiring, a gas appliance, a water heater, plumbing, or climbing a ladder — or if anything just doesn't feel safe — please stop and call a licensed professional (or give me a call at 330-200-8042). Bill's Home Tech and Bill Davis can't be responsible for any damage, data loss, or injury that comes from using these guides. Thanks for reading, and stay safe out there.

— *Bill*



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