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Our technical choices in home automation

Home Assistant, protocols and hardware – how HomeKaer chooses

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About this document

A home automation installation lasts fifteen or twenty years, much longer than the apps and connected gadgets of the moment. The choices made during the building work (cables, protocols, hardware) determine its reliability, its upkeep costs and whether it can evolve.

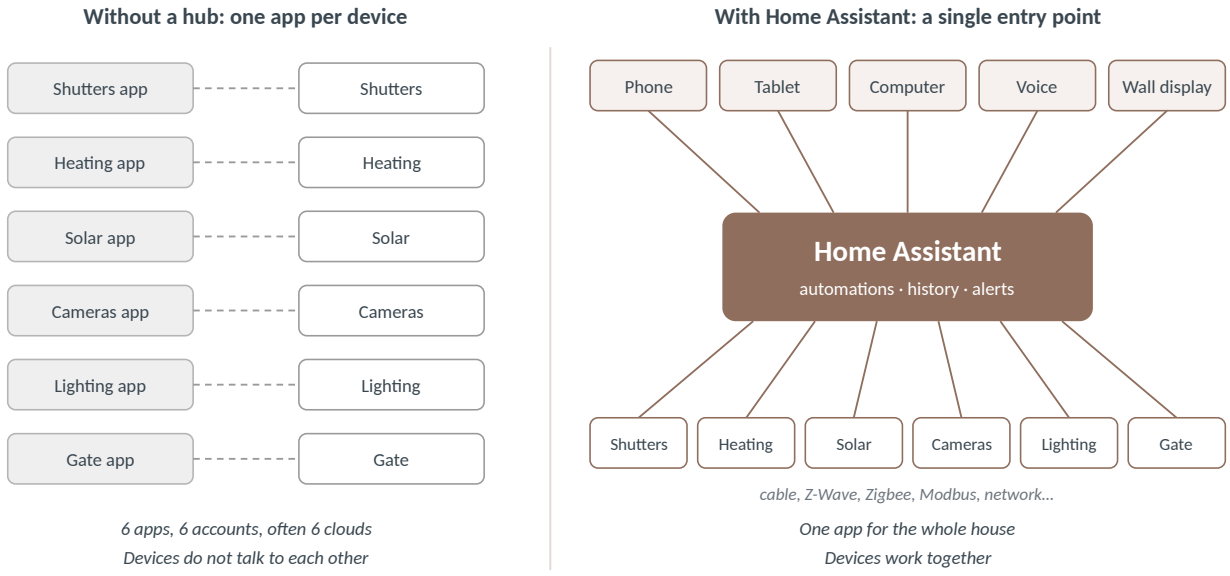
This document explains the rules HomeKaer applies to make these choices. It is meant both for homeowners who want to understand our recommendations, or to do the work themselves, and for electricians, project managers and builders preparing a project. Technical terms are explained in the glossary at the end.

Brands are mentioned as examples: the exact list of hardware is drawn up for each project. HomeKaer is independent of manufacturers (principle 5).

Home Assistant, the heart of the house

HomeKaer works with **Home Assistant**, open-source home automation software running in more than 2.28 million active households[1]. Installed on a small hub in the house, it sits **above all the equipment**: lighting, shutters, heating, solar production, cameras, gate, media.

- **A single point of entry**: the same interface on the phone, the tablet, the computer, a wall display, or by voice, for the whole house and every occupant.
- **The intelligence of the house**: Home Assistant makes the devices work together. The shutters close when the heating is on and night falls; the hot water cylinders start when the solar panels are producing; an alert arrives on your phone, with the camera snapshot, when the gate opens while you are away.
- **Each device keeps its role**: the heat pump keeps regulating the heating, the solar inverter keeps managing the battery. Home Assistant controls and coordinates them; it does not replace them.



One app per device, or Home Assistant at the centre

1 Open Home Foundation, 2025 annual report.

	One app per device	Home Assistant at the centre
Access	One app and one account per brand	A single interface on every screen, and by voice
Scenes	Limited to one device, or to a single brand	Across all devices, whatever their brand
Without Internet	Often no remote control any more, sometimes no control at all	Local devices keep working
Data	With each manufacturer	Stays in the house
Recurring costs	Subscriptions, depending on the brand	Free software; remote access through a Home Assistant Cloud subscription or a VPN; optional maintenance
Evolution	Depends on each manufacturer	New devices added to the same system
Service shutdown	The device may become unusable	Local alternatives favoured from the start

HomeKaer can also work on other systems, open or closed, in particular to integrate them into Home Assistant. But Home Assistant remains our reference solution.

What home automation changes in daily life

A connected home is not a home full of gadgets: every device linked to Home Assistant must provide a concrete service, every day or on the day something goes wrong. Here is what we recommend connecting, and why. There is no need to do everything at once: start with what really changes daily life, then add to it room by room.

Shutters and blinds

Shutters are the first lever for comfort and energy savings: well controlled, they keep the heat in during winter and the cool in during summer, without anyone having to think about it.

- **Following the sun and the season**: open to let the sun in during winter, closed during the hottest hours in summer.
- **Heat protection**: only the shutters on the sunny side close when it is hot outside.
- **Gentle wake-up**: the bedroom shutters open gradually at wake-up time, which differs on weekdays and at weekends.
- **Blind protection**: blinds and external venetian blinds retracted automatically in strong wind or rain.
- **Closing everything** in a single action at bedtime or when leaving, without going round the house.

To connect: the shutter and blind motors, preferably wired, and an outdoor temperature sensor or a weather station.

Lighting

Light that comes on when you need it, and goes off when you no longer do, means comfort and savings. The switches keep working normally.

- **Passageways** (hallway, utility room, garage, toilet): light on detection, switched off automatically; no more lights left on.
- **Light suited to the time of day**: a dim, warm night light, so as not to dazzle or wake anyone.
- **All lights off** when leaving, and an alert if a light stays on in an empty room.
- **Outdoor lighting** at dusk or on detection, never in broad daylight.
- **One-button moods**: dinner, film, reading.

To connect: the lighting circuits (modules in the panel or behind the switches) and detectors in the passageways.

Presence, doors and windows

Knowing who is there, and what is open, lets the house adapt by itself: this is what makes the other automations truly smart.

- **Room-by-room presence detection**: heating, lighting and ventilation follow actual occupancy.
- **Automatic away mode** when the last occupant leaves (detected by their phones): heating turned down, standby devices switched off, monitoring active.
- **Window open**: the heating in that room switches off.
- **Alert at bedtime or when leaving** if a door, a window or the garage has been left open.

To connect: wireless contact sensors on doors and windows, motion or presence sensors (the latter mains-powered), and the Home Assistant app on the phones.

Heating and air quality

Heating is the largest expense: adjusting it to the actual use of each room brings an immediate saving, with no loss of comfort.

- **Room-by-room scheduling** according to actual use, and the house warmed up again before you return.
- **Bathroom**: the mechanical ventilation switches to boost when humidity rises after a shower.
- **Air quality** (CO_2) in the bedrooms and the study: increased ventilation, or a reminder to air the room.
- **Weather**: heating brought forward before a cold snap, alert before rain.

To connect: the heat pump or boiler (Home Assistant changes the set points, regulation stays in the appliance), electric radiators through their pilot wire (fil pilote, the French control wire for electric heaters), thermostatic heads on water radiators, temperature, humidity and CO_2 sensors, the mechanical ventilation.

Energy

Seeing where the energy goes is already a way of taking back control of your bills. With solar panels, home automation uses your own production rather than selling it back at a low price.

- **Monitoring** of electricity, water and gas consumption, with an alert in case of anomaly: an appliance left on, water used at night.
- **Self-consumption**: hot water cylinder, washing machine and car started on the solar surplus.
- **Off-peak hours** used automatically.

- **Standby cut-off**: media and office sockets switched off at night and when nobody is home.
- **Load shedding**: non-priority appliances switched off before the subscribed power of the electricity contract is exceeded, without having to change the contract.

To connect: the Linky smart meter (TIC output; Linky is the smart electricity meter fitted in French homes), meters in the panels, the solar inverter and the battery, the hot water cylinder, the EV charger, energy-monitoring plugs.

Sound and media

The speakers become part of the house: they play music, but also important messages.

- **Music** in one or several rooms, one button per mood, radio at wake-up.
- **Voice announcements** on the speakers: doorbell, washing machine finished, rain forecast, door left open.
- **Cinema mode** at the press of a button: shutters closed, lights dimmed, amplifier and projector switched on.
- **Music paused** when someone rings at the door.
- **A single remote**, the phone or your voice for all devices.

To connect: the speakers and the amplifier (preferably networked), the television, the projector.

Security and access

Home automation warns, reacts and deters, while keeping your images and your data at home.

- **Presence simulation**: shutters and lights that behave as if you were there.
- **Cameras** recorded on site, with person and vehicle detection and an alert with a snapshot.
- **Water leak**: water supply shut off by a solenoid valve, and an alert.
- **Smoke**: lights on, shutters open, alert on the phone, in addition to the standalone detectors.
- **Doorbell or door phone**: notification with the visitor's image, remote answering and opening, history of visits.
- **Temporary access codes** for a home help, a tradesperson or a delivery.
- **Gate** closed automatically if it has been left open.

To connect: the cameras (on network cable), leak detectors and a solenoid valve, connected smoke detectors, the doorbell or door phone (see 'Door phones and doorbells'), the gate, the garage door, a smart lock.

> **Alarm and smoke detectors** – Home Assistant is not a certified alarm: when an insurer requires one, a certified alarm is still needed, and it can be integrated into Home Assistant. Smoke detectors remain standalone: they sound even if the home automation is down.

Care and family

The house can look after its occupants, and reassure their relatives.

- **Reminders**, audible or visual: medication, heatwave.
- **Activity monitoring** for an elderly relative, with an alert to the family in case of unusual inactivity.

- **Children coming home**: a notification when they get back from school.

To connect: motion and contact sensors, the speakers or indicator lights for the reminders.

Upkeep of the house

Silent failures are expensive when they are discovered too late.

- **Technical alerts**: freezer warming up, sump pump fault, low batteries, ventilation filter due for replacement.
- **Watering** according to the weather and soil moisture.

To connect: temperature sensors in the freezer, a contact on the sump pump, the mechanical ventilation, irrigation solenoid valves and a soil moisture sensor.

Our principles

1. **Home Assistant is the reference hub.** Other systems are integrated into Home Assistant, not the other way round.
2. **Local first.** We favour devices that communicate directly with the hub, inside the house, without going through the manufacturer's servers (the 'cloud'): the house keeps working when the internet router is down, your data stays with you, and a manufacturer that shuts down its service cannot make your devices unusable. A cloud-dependent device remains possible when there is no alternative; we then point it out in our advice and our proposals.
3. **Open, multi-manufacturer standards**, rather than closed ecosystems: for longevity, and so that another integrator can take over the installation. A module from a single manufacturer remains recommended when its local interface is documented and star wiring allows it to be replaced by another brand without touching the cables.
4. **Every departure is explained**: when a lower-rated solution is chosen, the reason is written down.
5. **Independence from brands.** HomeKaer has no partnership or exclusivity with any manufacturer or distributor, and receives no commission on the hardware it recommends. Solutions are chosen according to the rules in this document and the client's needs, never for commercial interest: a brand given as an example can always be replaced by another that meets the same criteria. A development carried out for a manufacturer (see 'Integrations developed by HomeKaer') is a paid service, which gives it no privileged place in our recommendations.

How we rate technologies

The four tiers

Each technology, product range or integration is rated on a tier:

Tier	Meaning
Recommended	First choice when the project allows it.
Acceptable with caveats	Used when the tier above is not feasible, or for a specific reason; the caveat is explained to the client.
Not recommended	Only to integrate existing equipment, or at the client's express request, after explanation.
Excluded	Not offered, not integrated. For example: a camera or video recorder reachable from the Internet through port forwarding; an unbranded, unsupported device for a critical function (heating, access, leak or smoke detection).

Selection rule: choose the highest tier the project makes feasible. Feasibility depends on:

- the type of project: new build, major renovation (walls opened up), light renovation, existing building;
- whether the circuits can be brought back to a panel as star wiring;
- the building and the size of the site (2.4 GHz caveat, see below);
- the budget;
- the equipment already chosen by the other trades (windows and doors, heating, solar PV).

Wall controls that keep working without Home Assistant (local logic in the module or on the bus) count in a solution's favour, but are not a deciding requirement.

What our caveats mean

Our advice and our proposals point out the issues that deserve your attention. The most frequent ones:

- **Community integration**: the device is not supported by Home Assistant itself, but by an extension developed by a third party. If its author abandons it, work may be needed to keep it compatible with new Home Assistant releases, or to replace the device; this work is billed by the hour, outside the maintenance contract. The device may stop working if the manufacturer shuts down its interface or its service.
- **Cloud dependence**: the device goes through the manufacturer's servers. It can no longer be controlled without the Internet, and may stop working in Home Assistant if the manufacturer shuts down or changes its service.
- **Compatibility not guaranteed**: a device already chosen (for example a radio motor supplied with the windows or shutters) has not been tested with Home Assistant. We test it; failing that, it remains controlled by its own remote.
- **Radio coverage**: on a large site, the range of 2.4 GHz networks is only guaranteed after an on-site check.

A caveat does not mean the solution is bad, but that it carries a risk you should know about before choosing.

Home Assistant integrations

The same technology can be well or poorly served by its Home Assistant integration. The table below rates integrations by who maintains them:

Level	Integration	What it guarantees
1	**Native**, in the Home Assistant core	Maintained and tested with every release, rated on the official quality scale (Bronze to Platinum).
2	**Official or well-established app**, for example Zigbee2MQTT or Matter Server ('apps' were called 'add-ons' before 2026)	Widely used and actively maintained companion software. Zigbee2MQTT is our default choice for Zigbee, for its device coverage.
3	**Marketplace**: built into Home Assistant since version 2026.11 (formerly HACS), but developed by third parties	Accepted with caveats if it is actively maintained: a release less than six months old, a maintainer active for several years or several maintainers, a large community, issues dealt with. Below that, not recommended, except by a reasoned case-by-case decision.
4	**Custom development** (custom integration, ESPHome, automations)	Maintained by HomeKaer (see below).

This scale measures maintenance; local operation is a separate criterion (principle 2). At the same level, a local integration ranks above one that depends on the cloud: the cloud-dependent one drops one tier.

Integrations developed by HomeKaer

When a device or a need is not covered by Home Assistant, or is poorly covered, HomeKaer develops custom integrations, at the request of a client or a manufacturer: support for a device, a protocol or an interface, local communication instead of a cloud service, missing features.

- Development follows Home Assistant's quality rules, and favours local communication.
- Keeping it working over time (compatibility with new Home Assistant releases) is part of maintenance, or of a dedicated service.
- It can be published as open source, on the Marketplace, or proposed for inclusion as a native integration, in agreement with the party that requested it.
- An integration developed at a manufacturer's request does not change how its hardware is rated: it is assessed like any other integration, according to the rules in this document (principle 5).

HomeKaer already develops and maintains several open-source Home Assistant integrations, published on GitHub (five of them in the Marketplace catalogue) and used by homeowners and other installers:

- **GCE Electronics**: IPX800 V4, IPX800 V5 and its extensions, Eco-Devices (meter tele-information and pulse counters), X-Display V2 (archived);
- **Prix Carburant**: fuel prices of French petrol stations, from public data;
- **Polar**: data from Polar watches and sensors;
- **TP-Link Easy Smart Switch**: port monitoring of managed network switches;
- **MCZ Maestro**: local control of compatible pellet stoves (archived).

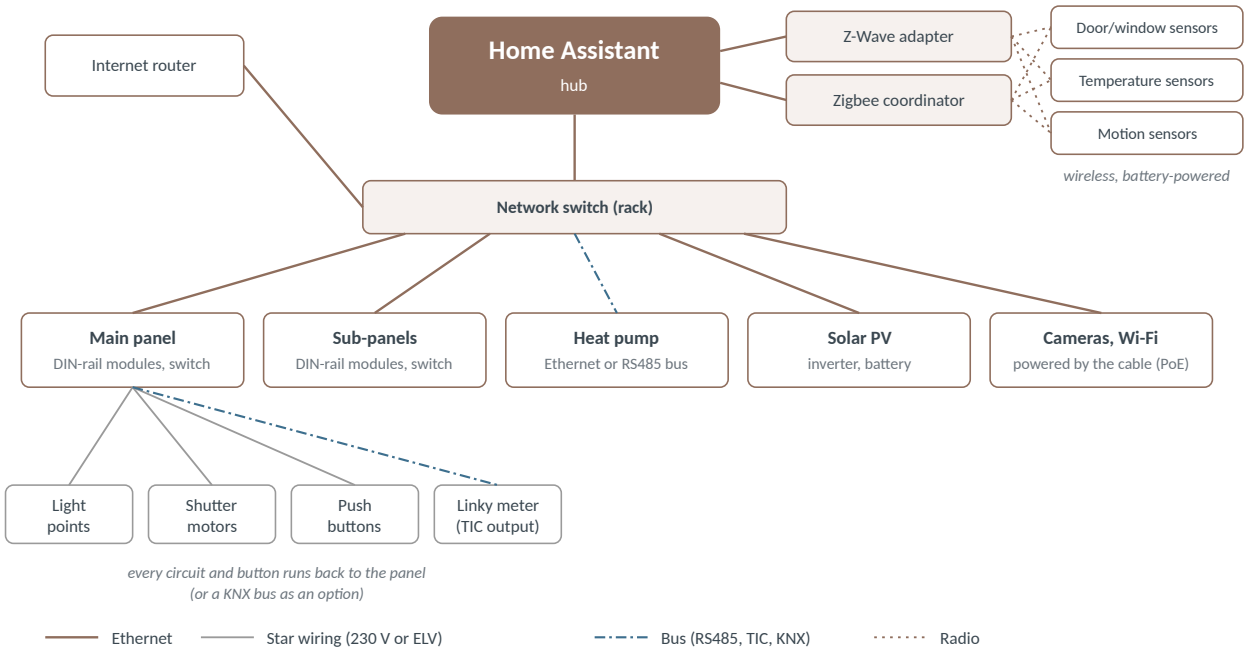
HomeKaer has also contributed to the Home Assistant core (Logitech Harmony and intent_script integrations). Beyond integrations, HomeKaer builds custom interfaces: wall displays programmed with ESPHome, dashboards tailored to the occupants. Details and references: homekaer.fr/en/integrations.

Choosing according to the project

Cable for fixed equipment, wireless for small sensors

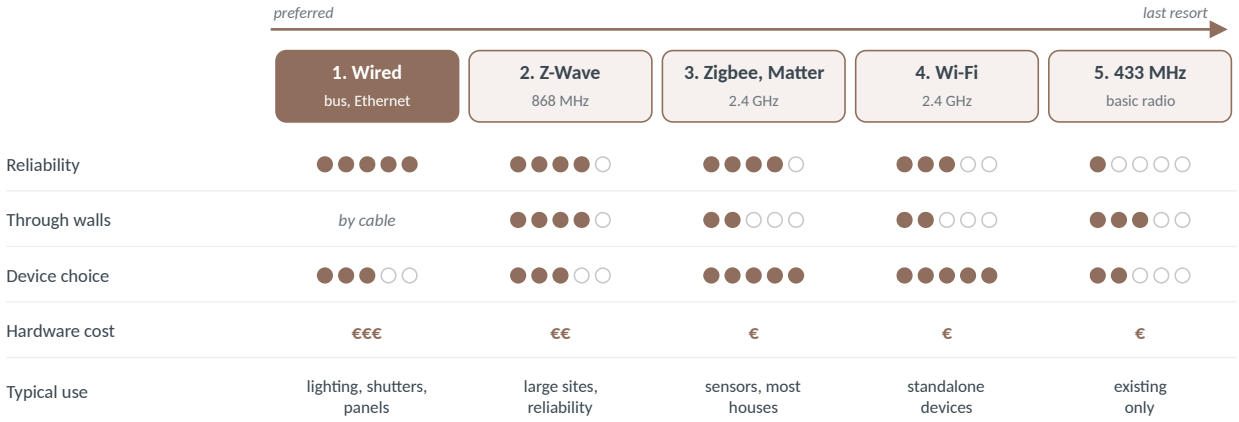
A device connected by cable depends neither on radio waves, nor on batteries, nor on the thickness of the walls. It is the most reliable and longest-lasting solution for everything that is fixed and powered: lighting, shutters, heating, electrical panels, solar production, cameras. It has to be planned during the building work: in a new build or a major renovation, the extra cost of wiring is small compared with the lifetime of the installation.

Small devices (door or window contact sensors, temperature sensors, motion detectors, buttons) are **wireless by default**. They run on battery for years, and their position can be chosen, then adjusted, without any building work. Presence sensors (millimetre-wave sensors, which detect a person who is not moving) are the exception: almost all of them are mains-powered, and their location is planned at the wiring stage.



A typical installation: cable for fixed equipment, wireless for sensors

Our order of preference runs from wired to wireless: **wired, then Z-Wave, then Zigbee and Matter, then Wi-Fi**, with 433 MHz radio reserved for equipment already in place. For small sensors, Zigbee or Matter suit most homes (cost, choice of consumer devices, battery life); Z-Wave is the choice on large sites, or when reliability matters more than cost.

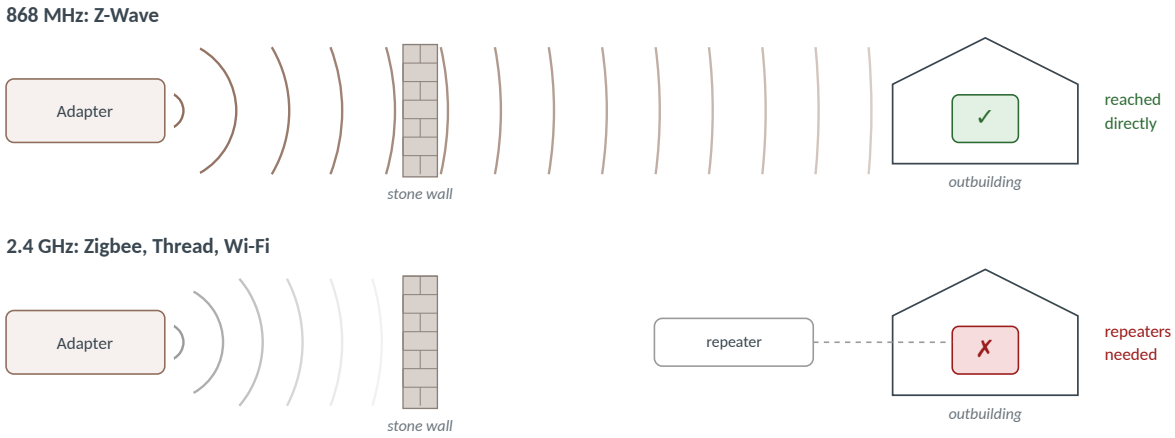


HomeKaer assessment for a typical house; each project is judged on its own constraints.

Our order of preference for protocols

Project	Lighting and shutters	Small sensors	Appliances (heating, solar, EV charger)
New build	KNX if the budget allows, otherwise Ethernet DIN rail modules, star wiring	Zigbee or Matter; Z-Wave on a large site	Dedicated integration, otherwise Modbus, over Ethernet cable or RS485 bus
Major renovation	Ethernet DIN rail modules; ESPHome controllers for a tight budget; KNX for a high budget	Zigbee or Matter; Z-Wave on a large site	Same
Light renovation	Wired for the circuits that already run to the panel; otherwise Z-Wave modules behind the switches (Zigbee possible in a house of ordinary size)	Zigbee or Matter; Z-Wave on a large site	Same, with cable to be pulled if possible
Existing installation	Integration of the system in place (KNX, wired system, radio shutters), supplemented with Z-Wave or Zigbee	Zigbee or Matter; Z-Wave on a large site	Integration of the existing equipment

> **Large properties and thick walls** – Zigbee, Thread and Wi-Fi use the 2.4 GHz band, whose range is limited. On a property with several buildings, with thick stone or concrete walls, or with distant outdoor equipment, they remain possible but require investment in the mesh (mains-powered repeater modules, additional gateways) to achieve sufficient range. Coverage cannot be guaranteed before it has been checked in real conditions, which may lead to extra costs. In these cases, we favour wired solutions or Z-Wave.



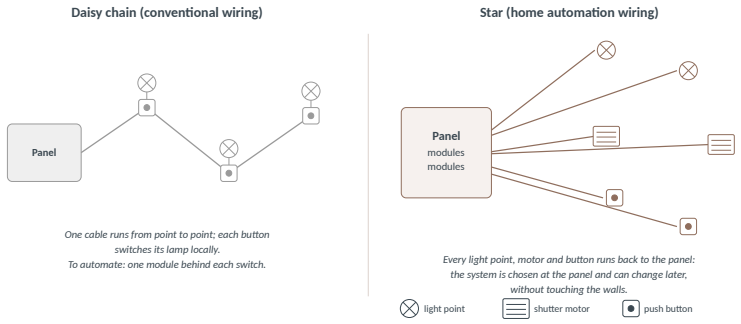
Radio range through a thick wall

What to ask the other trades

- **Window and shutter installer**: wired shutter motors preferably; failing that, radio motors whose integration with Home Assistant is known (io-homecontrol with a local gateway, Z-Wave, Zigbee).
- **Heating engineer or plumber**: a heat pump with a Modbus or network interface, connected by cable.
- **Solar PV installer**: enabling local access (Modbus TCP) to the inverter or energy manager, with their installer account.
- **Electrician**: the wiring on the ‘Wiring to plan for’ page.

Wiring to plan for

This page can be handed to the electrician as it is. To be planned before the partition walls go up, in agreement with HomeKaer:



Daisy-chain wiring, or star wiring to the panel

- **Star wiring**: bring the power supplies of the light points and shutter motors, and the push-button wires, back to the panel or sub-panel, rather than daisy-chaining them from one point to the next. This wiring keeps the choice of system open, and allows it to be changed later.
- **Push-buttons**: at 230 V for Ethernet DIN rail modules, as for an impulse relay; as a dry contact or at ELV (extra-low voltage) for ESPHome controllers and KNX inputs. H07V-U conductors suit both; running ELV and 230 V in the same conduit must be validated by the electrician (the French wiring standard NF C 15-100). KNX bus cable in addition, if KNX is chosen.
- **Neutral and deep back boxes** at every switch, so that a module can be fitted later.
- **Presence sensors**: a power supply at each planned location.
- **Wall displays**: at each location, a deep back box with live and neutral (for a 230 V display or a flush-mounted power supply), and a conduit with a network cable to the panel or the rack (for a tablet powered over the network cable).
- **Space in the panel** for the DIN rail home automation modules (leave spare rows).
- **Ethernet cable** to each panel and sub-panel, with a DIN rail switch, as well as to the solar inverter or energy manager, the EV charger, the cameras (PoE) and the Wi-Fi access points.
- **Door phone or doorbell**: a Cat 6 network cable from the rack, powered over the cable (PoE), and a cable from the panel to the door strike or the gate motor (details in ‘Door phones and doorbells’).
- **RS485 bus** (shielded twisted pair) to the appliances that only have Modbus RTU: heat pump, mechanical ventilation, meters.
- **Linky meter**: a cable from the TIC output to the panel, to monitor consumption.
- **Links between buildings** in outdoor network cable or fibre, and a powered, cabled **central location** for the radio gateways.
- **Empty spare conduits** to the loft, the garage, the gate and the outdoor areas.

Small battery-powered sensors (doors and windows, temperature, motion) need no wiring.

Installation, connection and electrical compliance remain the electrician’s responsibility. HomeKaer provides the list of circuits and devices, then configures and integrates the whole system.

The technologies

Wired technologies

Lighting, shutters and inputs

Technology	Home Assistant integration	Tier	Reason
KNX (MDT, Theben, Hager, Schneider)	Native, local, through a KNX IP interface	**Recommended** (new build, large budget)	Multi-manufacturer, decentralised standard: the push-buttons, usually on the bus, work without Home Assistant. Can be taken over by any KNX integrator. Programming requires a licence (ETS).
Ethernet DIN rail modules (Shelly Pro)	Native, local	**Recommended** (new build and renovation)	About a third cheaper than KNX for an equivalent panel (hardware only, November 2026). Push-buttons work without Home Assistant, shutter position known after calibration, energy metering. Closed firmware, but documented local interface.
ESPHome DIN rail controllers (KinCony, Waveshare, Dingtian)	Native, local	**Acceptable with caveats**	Open firmware, very inexpensive. Electrical compliance of the boards not demonstrated: in the main panel, the board drives branded modular relays, which switch the 230 V. Configuration maintained by HomeKaer.
Ethernet relay boards (GCE IPX800)	Marketplace (integration maintained by HomeKaer)	**Acceptable with caveats**	Proven board, open local API. Under watch: manufacturer taken over in 2026, sharp price rises, disappointing recent products.
Open single-manufacturer systems (Velbus, Domintell)	Native (Velbus) or Marketplace (Domintell, by the manufacturer)	**Acceptable with caveats**	A single manufacturer, who publishes or supports the local interface. New builds case by case; Velbus under watch.
Closed single-manufacturer systems (Loxone, Legrand MyHOME, Niko)	Marketplace	**Not recommended**	Community integration only; protocol not guaranteed, or access through the manufacturer's cloud (Niko Home Control II). For integrating an existing installation.
Modbus relay modules	Native, polling	**Not recommended**	Push-buttons inactive when Home Assistant is down; less responsive controls. ESPHome does better on the same type of hardware.

Comparison by function

The four wired families cover the same needs with different modules. The number of channels per module is given in brackets; references are examples, noted in November 2026. ESPHome controllers form a single family whatever the manufacturer (KinCony, Waveshare, Dingtian): same firmware, same integration, and the model

is chosen according to the number of channels and the space available in the panel. Dingtian boards must be ordered unlocked so that ESPHome can be installed on them.

Controls, lighting and shutters

Function	KNX	Shelly Pro	ESPHome (KinCony, Waveshare, Dingtian)	GCE IPX800
Logic	No hub: devices talk to each other on the bus	No hub: each module handles its own inputs and outputs	No hub: each board has its own logic; between boards, over the local network	IPX800 V5, to which the extensions connect
Switching	Actuators from 1 to 24 channels	Pro 1 and 1PM (1), Pro 2 and 2PM (2), Pro 3 (3), Pro 4PM (4)	Boards from 2 to 32 outputs; in the main panel, they drive branded modular relays (Finder, Hager)	IPX800 V5 and X-8R (8)
Inputs	Modules from 2 to 16 channels, or KNX push-buttons	1 to 4 per module, at 230 V	2 to 30 per board, dry contact or ELV	X-8D (8), X-24D (24)
230 V dimming	Dimming actuators from 1 to 6 channels	Pro Dimmer 1PM (1), Pro Dimmer 2PM (2)	0-10 V output to a branded modular dimmer (Finder 15.11, one per circuit)	X-DIMMER (4)
0/1-10 V LED drivers	0-10 V actuators	Pro Dimmer 0/1-10V PM (1)	KinCony DM16 (16)	X-010V (4)
12/24 V LED strips	KNX LED controllers	Pro RGBWW PM	KinCony KC868-AP (16), or 0-10 V output to an LED driver	X-PWM (12)
Roller shutters	Actuators from 1 to 16 shutters	Pro Dual Cover PM (2)	2 outputs per shutter, with up/down interlock	X-4VR (4)

Heating, sensors and operation

Function	KNX	Shelly Pro	ESPHome (KinCony, Waveshare, Dingtian)	GCE IPX800
Pilot wire	Pilot wire module (2 zones, 6 modes)	2 relays and 2 diodes per zone (4 modes)	2 outputs and 2 diodes per zone (4 modes)	X-4FP (4 zones, 6 modes)
Room sensors	Temperature and humidity; light level in the presence detector	No wired sensor: wireless sensors	ESPHome sensor powered by the network cable (PoE), RS485 or 1-Wire probe	X-THL (temperature, humidity, light level)
Presence	Ceiling KNX detector, with light level measurement	Contact detector on an input	Contact detector on an input	Contact detector on an input
Meters (Linky, gas, water)	Through Home Assistant	Energy metering in the modules; Pro 3EM for the panel	Tele-information module and pulse inputs	Eco-Devices (tele-information and 2 pulse counters)
Without Home Assistant	✓ **Yes**, push-buttons act over the bus	✓ **Yes**, in the module	✓ **Yes**, in the board; from one board to another, over the local network	✓ **Yes**, in the IPX800 and its extensions
Configuration	ETS software (licence), project handed to the client	Local web interface	ESPHome file, maintained by HomeKaer	IPX800 web interface
Hardware cost	High	About a third less than KNX	The lowest	Slightly cheaper than KNX for a small installation (the controller carries 8 relays and 8 inputs), comparable beyond
Tier	**Recommended** (new build, large budget)	**Recommended**	**Acceptable with caveats**	**Acceptable with caveats**

Choosing according to the need

- **KNX** when the budget allows, in new builds: the only family that covers everything on the same bus, including 6-mode pilot wire, wall sensors and presence detectors with light level measurement. Any KNX integrator can take over the installation.
- **Shelly Pro** for new builds and renovations on a medium budget: little configuration, built-in energy metering. Few inputs per module, and no wired sensor.
- **ESPHome controllers** when many inputs are needed (push-buttons, wired detectors), metering or custom wired sensors, on a tight budget: the highest channel density for the price, with the electrical compliance caveat above.
- **GCE IPX800** to extend an existing installation; in new builds, the other families are preferable (see the “Lighting, shutters and inputs” table).

- **Families can be combined**: for example Shelly Pro dimmers and an ESPHome controller for inputs and metering. A command that goes from one module to another then depends on the local network, or on Home Assistant.

Other wired systems

The comparison is limited to the families HomeKaer installs most often. Other wired systems are present in France:

- **Open single-manufacturer systems** (Velbus, Domintell), whose manufacturer publishes or supports the local interface: **Acceptable with caveats**, new builds case by case.
- **Closed single-manufacturer systems** (Loxone, Legrand MyHOME, Niko), integrated into Home Assistant only by the community: **Not recommended**, for integrating an existing installation. See the "Lighting, shutters and inputs" table for these two families.
- **ABB free@home and the Eltako Series 14 bus**: not rated yet, studied case by case according to the rules of this document.
- **Programmable controllers driven over Modbus** (Siemens LOGO!, Wago, Arduino Opta): under watch, not rated yet.
- **Z-Wave DIN rail modules** (Shelly Wave Pro): for a panel that the network cable does not reach; rated as Z-Wave.

Appliances and specialised lighting

Technology	Home Assistant integration	Tier	Reason
Modbus (heat pumps, inverters, ventilation, meters, EV chargers)	Native, polling	**Recommended** when the appliance has no dedicated integration	Often the only local option. Requires the manufacturer's register map; some appliances accept only one connection at a time.
DALI-2 (Sunricher, Lunatone gateways)	Native through a gateway (since 2025.11), or through KNX	**Acceptable with caveats**	The lighting standard, useful in commercial buildings and for dimming; native integrations still recent, tied to one brand of gateway.

Wireless technologies

Technology	Home Assistant integration	Tier	Reason
Z-Wave and Long Range, 868 MHz (Fibaro, Aeotec, Heatit, Shelly Wave)	Native (Z-Wave JS), local	**Recommended** (first wireless choice)	More expensive and less widespread, but reliable and responsive; serious manufacturers, certified interoperability, S2 encryption; goes through walls well, with no interference with Wi-Fi. Long Range links a device directly to the gateway, without a mesh, over several hundred metres.
Zigbee, 2.4 GHz (Philips Hue, IKEA, Aqara, Sonoff)	Zigbee2MQTT (app), local	**Recommended**	Affordable, very wide choice of consumer devices, good battery life for battery-powered sensors. Mesh to be sized on large sites.
Matter / Thread, 2.4 GHz, Wi-Fi or Ethernet (Eve, Nanoleaf, IKEA)	Native, local	**Recommended**	Multi-manufacturer standard that is taking time to establish itself, but integrates at the same level as Zigbee. A Matter device can be shared between Home Assistant and Apple Home, Google Home or Alexa.
Wi-Fi, 2.4 GHz (Shelly, ESPHome)	Native, local	**Acceptable with caveats**, as a last resort	Load on, and dependence on, the Wi-Fi network; to be limited to isolated devices.
io-homecontrol, 868 MHz (Somfy, Velux)	Native, local under conditions (Velux KLF 200; Somfy TaHoma in developer mode)	**Acceptable with caveats**	Common on shutters and roof windows supplied by the window installer. On the Somfy side, local control has known limitations.
EnOcean, 868 MHz (Eltako)	Native	**Not recommended**	Interesting battery-free switches, but a little-used technology, kept under watch.
433 MHz (Somfy RTS, sensors)	Native (RFXtrx), no state feedback	**Not recommended** (except existing equipment)	No acknowledgement, no encryption.

Door phones and doorbells

Two families to tell apart:

- the **smart doorbell**, at the front door: call, video and two-way audio, without access control;
- the **door phone**, which also controls a door strike or a gate.

Door phones (door strike or gate)

Solution	Home Assistant integration	Tier	Reason
DoorBird (D series)	Native, local	Recommended	The only complete door phone with a native, local integration: call, relay, video, two-way audio, documented local interface, remote relay, good vandal resistance. European manufacturer.
UniFi Protect and Access (Ubiquiti)	Native, local	Acceptable with caveats	Very good integrations, but a UniFi console is required, the ecosystem is closed and there is no two-way audio in Home Assistant. For a client already equipped with UniFi.
Grandstream GDS372x	Native (since 2026.11), local	Acceptable with caveats	Robust SIP door station with two relays; integration written by the manufacturer, but still very limited.
Dahua VTO	Marketplace, local	Acceptable with caveats	Active community integration, with two-way audio in Home Assistant.
Axis I8116-E	Native, local	Acceptable with caveats	Professional-grade door phone, at a professional price.
2N, Akuvox, Fanvil, Hikvision	Marketplace or SIP	Not recommended	Inadequate integrations: answering goes through the cloud, past security flaws. 2N remains usable over SIP to integrate an existing small multi-unit building.
Wi-Fi-only or cloud-only door phones	–	Excluded	Dependence on the Wi-Fi network or on the manufacturer for an access function.

Smart doorbells (front door)

Solution	Home Assistant integration	Tier	Reason
Reolink Video Doorbell PoE	Native, local	Recommended	Powered by the network cable; the first device to support two-way audio in Home Assistant. No relay: does not replace a gate door phone.
Aqara G400	No dedicated integration	Not recommended	Support for the doorbell press not confirmed; set-up through the manufacturer’s cloud.
Wi-Fi-only or cloud-only doorbells	–	Excluded	Same reason as for door phones.

Calls on the phone

When someone rings, the Home Assistant app sends a notification with the visitor’s photo and an ‘Open’ button, then opens a dashboard with the live video, two-way audio and opening; the ring can also be announced on the speakers. No solution makes the phone ring like a real call without the manufacturer’s app. Answering on a wall-mounted tablet (SIP) is possible on request.

Door phone wiring

- A Cat 6 network cable from the rack to each door phone or doorbell, powered over the cable (PoE), in its own conduit, over 80 to 100 m at most. Beyond that: fibre or a switch at the gate, to be studied.
- At the gate: outdoor-rated cable in a green conduit (TPC, the colour used for communication cables in France), separate from the motor's red power conduit, and a network surge protector connected to earth.
- Door strike: controlled from inside (the manufacturer's remote relay in the panel, or a relay controlled by Home Assistant), never wired directly to the outdoor unit, which can be torn off from the street. This requires a cable from the panel to the strike, and a separate 12 V power supply, with a cross-section suited to the distance.
- Gate motor: a cable between the door phone relay and the motor's 'pedestrian opening' input, and a link to the motor's 'full opening' input and status output.
- Door position contact wired back to the panel.
- Controls between 0.90 and 1.30 m high (mandatory in multi-unit residential buildings in France), camera facing the visitor, on the driver's side at the gate (the left side in France).
- The door phone's network socket on a separate network, since it can be reached from the street.
- In a renovation where no cable can be pulled: a network adapter over two existing wires is possible.

Hub, network and remote access

Hub and gateways

- **Hub**: a Home Assistant Green box for a simple installation; an Intel-based mini PC for a large installation or one with locally analysed video surveillance.
- **Radio gateways**: Home Assistant Connect ZWA-2 for Z-Wave, an Ethernet Zigbee coordinator. They are placed at the centre of the area to be covered, away from sources of interference (network rack, Wi-Fi router).
- **UPS (backup power supply)**: it protects the hub, the network and the gateways from short power cuts.
- **Network**: the hub, the wired controllers and the solar inverter are connected by Ethernet cable; the heat pump by Ethernet or RS485 bus. Wired Wi-Fi access points, a PoE switch, and a separate network for connected devices.

Remote access and security

Each occupant logs in with their own account (username and password). To reach the house from outside, there are three options:

Option	Advantages	Drawbacks
Port forwarding (direct access over the Internet)	Simple, no subscription	The login page can be reached by anyone on the Internet.
Home Assistant Cloud (renamed Home Assistant Link in December 2026)	Simple, encrypted, no port forwarding; funds Home Assistant development	Paid subscription; goes through Nabu Casa's servers.
VPN or 'zero trust' access	Much more secure: nothing is exposed on the Internet	More complicated to set up; emergency access is more complicated.

Camera footage stays recorded on site, and the cameras are never exposed directly on the Internet: they are viewed through Home Assistant.

Voice assistant and artificial intelligence

Home Assistant can be controlled by voice, through satellites (small devices with a microphone and a speaker) placed around the house. Everyday commands are understood on site. Artificial intelligence then extends what Home Assistant, and by extension the house, can do: free phrasing, questions about the state of the house, answers in a natural voice. Two routes:

- **locally**, on powerful hardware, with open-weight models: nothing leaves the house, but the hardware costs more;
- **through an external service**, for example OpenAI, Google Gemini or Anthropic: cheap to use, but the spoken sentences and the state of the exposed devices go through that service.

Our rules:

- local commands first: AI only takes over for what they do not understand;
- an external service remains an option, with the 'cloud dependency' caveat; we favour a paid plan whose terms exclude using the exchanges to improve the models, with a spending cap and usage alerts set up from the start;
- access and security (locks, gate, garage door, alarm) are never exposed to the model;
- a local model as soon as the hardware allows it.

What still works during an outage

Function	Without Internet	Without Home Assistant	Power cut
Wired wall controls (KNX, DIN rail modules)	✓ Yes	✓ Yes	✗ No; back to normal when the power returns
Radio modules behind the switches	✓ Yes	✓ Yes, the switch controls the load directly	✗ No
Scenes and automations	✓ Yes, for local devices	✗ No	Only if the hub, the network and the gateways are on the UPS
Heat pump heating	✓ Yes	✓ Yes, with its own set points	✗ No
Access from outside	✗ No	✗ No	✗ No, unless the internet router and the hub have backup power
Video surveillance	✓ Yes, recording on site	Depends on the recorder	Only with a UPS
Smoke detectors	✓ Yes	✓ Yes	✓ Yes, on battery

Maintenance and hardware

Maintenance and backups

A home automation installation needs looking after. HomeKaer offers remote maintenance:

- updates of Home Assistant and the devices at a regular pace, after checking for changes likely to break the installation;
- automatic backups, with at least one copy outside the hub, so that the hub can be rebuilt on new hardware if it fails;
- monitoring: unreachable devices, silent radio network, disk space, low batteries (they last from one to several years depending on the sensor);
- adding or adjusting everyday scenes;
- up-to-date documentation of the installation, handed over to the client. For KNX, the ETS project, its password and the KNX Secure keys are handed over to the client: a lost password cannot be recovered, and without them no one can modify the installation.

Without a maintenance contract, the installation keeps working. But updates pile up, and a late update often takes more work; backups and monitoring are then the client's responsibility.

Hardware purchasing and quality

- The hardware is bought by the client, from a list of products approved by HomeKaer. The electrical installation (panels, modules, cables) remains the electrician's job.
- An 'equivalent' device may not be compatible: every product is approved by HomeKaer before it is ordered.

- Preference for certified hardware (Z-Wave, Matter) or hardware with open firmware (ESPHome).
- No unbranded, unsupported hardware for critical functions (heating, access, alarm, leak or smoke detection).
- Purchases from established distributors, for the warranty and after-sales service.

Your project with HomeKaer

1. **Discussion and study**: your needs, the plans, the choices already made with the other trades.
2. **Proposal**: the solutions chosen according to this document, with their caveats, the hardware list and the wiring to plan for.
3. **Building work**: the electrician installs the wiring and the hardware; HomeKaer answers their questions.
4. **Configuration**: installation of Home Assistant, integration of the devices, dashboards, scenes.
5. **Acceptance and handover**: checks with you, explanations, documentation.
6. **Maintenance**, optional.

To talk about your project: **contact@homekaer.fr** or **homekaer.fr**.

Glossary

Term	Definition
Bus	Shared cable that connects several devices and carries their commands (KNX, RS485).
DIN rail	Standard rail in electrical panels, onto which the modules clip.
ELV	Extra-low voltage (12 or 24 V), safe to touch.
ETS	Programming software for KNX installations.
Firmware	Software embedded in a device.
Gateway	Box that connects a radio network or a bus to the hub.
Marketplace	Catalogue of community extensions built into Home Assistant (formerly HACS).
Mesh	Radio network in which each mains-powered module relays the messages of the others, to extend the range.
Modbus	Industrial protocol common on heat pumps, inverters and meters, over RS485 cable (RTU) or the network (TCP).
PoE	Power over Ethernet: powering a device (camera, access point, tablet) through its network cable.
Star wiring	Each light point, motor or button has its own cable back to the panel.
Zigbee, Z-Wave, Thread	Mesh radio protocols for home automation.

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Revision history

Version	Date	Changes
1.0	11/11/2026	First published version.
1.1	11/11/2026	Comparison of wired systems by function, with guidance by need. Single-manufacturer systems split by openness of their local interface: Loxone, Legrand MyHOME and Niko not recommended for new builds. Dingtian added to ESPHome controllers.