

XXIII – Drawbacks and catches of smart home systems

Introduction

What are the disadvantages of a smart home?

Is it always worth it to install 'intelligence'?

Are there cheaper 'replacements' for intelligent components available?

Everywhere you turn, you only see articles praising the profits and advantages of smart home systems. And yet everything has their disadvantages or superfluous functions which you have to pay for. Below you will find a link to a some of my advice and suggestions based on 12 years of experience.

System disadvantages

LCN, IHC, X10, Powernet and other systems basing on power cabling

The action of a differential switch (typical fuse in a switch cabinet - typically there are 1-2 for the whole house/apartment) causes breakdown of communication across the whole system. No console/switch will function, one cannot turn on the light, raise any blind, etc. This poses a risk in a critical situation (in the night, during a fire, etc.). One can reduce the risk by installing more differential switches, to reduce the possible non-functioning part of the system in size, but this will bring with itself additional costs (such a switch costs 10x more than an ordinary fuse), more cables and a larger switch cabinet.

Xcomfort, X10, Radiobus and other radio-based systems powered from outlets

Actuation of an overcurrent switch (typical fuse in the switch cabinet) causes KNX appliances in the affected circuit (usually up to a few rooms) to stop functioning. Therefore, no console/switch for that circuit will work, one cannot switch on the light, raise any blind, etc. This poses a risk in a critical situation (in the night, during a fire, etc.). One can reduce the risk by installing more circuits (fuses), to reduce the possible non-functioning part of the system, but this means more cables and a larger switch cabinet.

KNX, Crestron, Lonworks and other bus-based systems

- A single control cable (the bus connecting the various panels or consoles) poses a risk – i. e. when drilling holes to hang an innocent painting. If you drill through the bus cable, you might bring down the whole system (from the drilling point downstream to the house, not upstream to the power supply). That is why a proper design is so important, as is dividing the bus into circuits (and not running the whole house via a single cable).
- Higher equipment price (of course in exchange for more capabilities). The appliances, however, make up only a part of the costs, so the whole system is more expensive than others by several per cent - it is therefore worth it to calculate the precise cost instead of just listening to opinions about the 'much more expensive KNX system".
- A large central switch cabinet (usually the size of a normal door) that needs to fit in somewhere, somehow in the interior. It's best to hide it away behind the clothes in the wardrobe.
- Clicking of relays, which remind us where the switch cabinet is. Here clothes will also be helpful, as well as a normal door leading to the room where the switch cabinet is installed.
- Lots of cables around the switch cabinet, because every circuit (lamp) needs to have an independent cable. One cable has a diameter of ca. 1 cm, so if there are fifty of them, they will need a 10 cm x 5cm duct, or laying in the plaster in a layout of i. e. 1x50cm (meaning - a half-metre wide strip in the wall under the ceiling). One can solve this by installing several smaller switch cabinets (one on the upper floor) and/or locating it in the middle of the floor, so the cabling goes out of it in different directions.

All systems in which Internet control over cable or WiFi connections is implemented

Theoretically, one can break into such a system, and i. e. turn someone's lamp on or open the window blinds or a gate. If one wants to have insight remotely into what is happening at home, they should consider whether they need the ability to open the gate remotely (a burglar will probably gain nothing by switching your lamps on). Of course, internet-enabled controllers have passwords, so if one has no expensive items, like paintings, etc., at home - the burglar will probably not bother themselves with breaking passwords (like it is with the door lock - the more valuables inside, the stronger the protection should be).

Possible savings and cheaper replacements

Heating control

- Actuating outputs should not be used in heating splitters i. e. in the bedroom, because the 'clicking' of the relay may be irritating - it's better to use contactless heating actuators.
- Valves cutting off the water supply to the radiators (done via actuators) is better located at splitters, not at the radiators, because during opening/closing the water running through them tends to 'hiss' loudly, which might be irritating for anyone in the room.
- In bathrooms, toilets, wardrobes, where one only has floor heating, I advise against controlling it via the smart home system - it's cheaper and better to use popular thermostats by DEVI which adapt very well to the inertia of the heated area (usually 2-3 cm of concrete).

Motion detectors

- 'Intelligent' motion detectors are expensive, brand X motion detectors available from DIY stores like Castorama are much cheaper and usually work similarly (they are usually less stylish though, so they should rather be placed in closets/pantries, and those 'smart' ones in toilets or bathrooms). Their disadvantage is, however, limited durability - their contacts tend to give out in 2-3 years, requiring replacement. If you do it by yourself, then this might be economic for you. If you are planning on hiring a specialist - then just pick the intelligent sensors instead.
- instead of smart motion detectors one can use the sensors of the alarm system, but be wary of a few possible dangers. The central unit of the alarm system is not designed for building automation, and its 'processing power' might sometimes not be enough, causing false alarms, freezing of the alarm system, etc. - so i wouldn't advise you to take the risk and use the alarm system sensors to control your lights. These sensors also have a small lag (so as not to cause false alarms), which can be unnerving, when i. e. the light in the toilet comes on only a second after we enter it.

Audio/Video

- If you are considering purchasing a plasma screen for several thousand, consider switching to a large screen (rolled up, i. e. in the suspended ceiling) and projector. For the same money you will get an image that's 4-8 times the size, which will delight you, and which makes an impression a hundred times bigger than the best TV. The disadvantage of projectors is that the image is very hard to see during the day, so they are only fit for watching in the evenings or in darkened rooms.

When not to use components of the 'smart' system?

- for control of lamps on nightstands or the desk lamp - they are only required when we are within arm's reach of them, so turning them on by hand does not differ from pressing a smart button, which may be a hundred times more expensive than the switch on the lamp's cable. It's worth controlling them, however, if they are to be part of light scenes, that is why lamps standing i. e. in the living room, despite having their own switch on their power cable, should rather, I would say, be included in the system.
- in bedrooms, guest rooms having 1-2 lamps - there is simply no way for the 'intelligence' in these rooms to present its merits (light scenes, multifunctional consoles). Rather leave the smart consoles to rooms having above three lamps, a window blind and/or heating we really want to control.
- when a component is only used once or twice a year and it costs in excess of PLN 1000. I assume that it's fun to get yourself a 'gadget' below this sum. Of course, the line between cheap and expensive is a matter of individual conditions.

Other guidebooks by this author

How to make your house intelligent? (an e-mail training course in 20 parts)

This is the only free publication on the market to gather all basic information about intelligent home systems in a reader-friendly guide form. The guide is targeted primarily at persons building or designing a house or flat, but also at specialists and designers who would like to get to know the basics or have them all together in one publication. The guide has over 160 pages and is distributed via e-mail in 20 parts (with the option of downloading it in whole). You can read more and sign in at www.smarthome.eu/general-guide

How not to forget that one little cable?

Do you know that forgetting one little cable can cause you to break down your walls again and cause the family to complain that you weren't diligent enough to read the list of over 200 cables that you need to account for when designing the installation for your house? Learn more about this guide and order it at www.smarthome.eu/order-cables-guide

How to create a KNX design and installation?

Installation specialists and smart home system designers often seek answers to these and many related questions regarding the design and implementation of KNX systems. Browsing hundreds of pages of general material is time-consuming and ineffective. This, however, can be avoided. Learn more about this guide and order it at www.smarthome.eu/order-design-guide

How to Pick and Choose KNX Equipment?

There are now over 10000 devices and appliances for the KNX system offered by over 400 manufacturers. How to handle all of this? How to pick the device to best suit user expectations? From among over 10000 units, this guide, on over 100 pages, contains descriptions and/or images of over 200 of the most interesting devices and their uses, including a handful of practical tips. Find out more about this guide and order it at: www.smarthome.eu/order-units-guide

How to build an electric switch cabinet for the KNX system?

Step by step we will guide you through the process of assembly and construction of large electric switch cabinets. We will also tell you what you definitely cannot forget, and where you should take particular care. Learn more about this guide and order it at www.smarthome.eu/order-cabinet-guide

How to Start Up a KNX System?

A guide on programming KNX devices in the ETS application, or starting up a system. This guide will provide You with the knowledge You expect. It will replace a programming training seminar, and having read it, you will be able to single-handedly programme and start-up a KNX system i. e. for a small house. Learn more about this guide and order it at: www.smarthome.eu/order-startup-guide

How to win customers for premium products?

Solid information for everyone offering Premium-class products to their customers – expensive, luxury components for the home that are not required by most people, who still dream of them, and yet are available for the few who consider them absolutely necessary ☺ Learn more about this guide and order it at: www.smarthome.eu/order-clients-guide

Installations - document templates

I am providing templates of documents, designed by experts from SMARTech in consultation with lawyers. Apart from a contract draft for the execution of an installation, available are, among others, commissioning protocols, system verification documents, even calls for payment. Learn more about this guide and order it at www.smarthome.eu/order-documents-guide

The set of guidebooks about KNX systems and installations

All guidebooks above in one set you can buy with 30% discount.

www.smarthome.eu/knx-system-the-set-of-guidebooks

Ready Design Plans

A KNX system design for a house of 200 sq m

Based on this design you will learn how to execute other smart home designs and installations. The smart electric installation on its own (the design includes others as well) for a house of 200 sq m contains 171 modules in the switch cabinet, 130 cables running from the cabinet to the building, and several thousand connections. An experienced designer needs about 112 hours of work to create such a design. The time and money saved through the use of ready elements - this would be enough to calmly recommend the smart system design specifically to you.

Learn more about this guide and order it at www.smarthome.eu/order-plans-pdf

KNX system design - ETS files

Thanks to this, you can implement changes and load ready programs to devices according to your system within a few hours. You can be certain that everything will work correctly. This set consist ETS database and project files and list of functions implemented in typical 200m2 house.

Learn more about this guide and order it at www.smarthome.eu/order-plans-ets