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A Man In a Smart House

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Smart House or Intelligent House should be equipped by such technologies, that could RF transmitter and receiver, some ones have help its residents and intuitively perform their commands and wishes expressed by direct even small information display. Remote control and simplest command. Each man is individual, so household members may have a to- is often the only one way how to integrate spetally different opinion about way of control and different needs.

cialised device into the whole house structure.

It is a case of old device, especially

audio / video, many different air-

conditioning units of Asia producers

or windows controllers, and also independent jalousie and blinds systems.

Here is very useful to get information from supplier of system installation,

whether such connection is possible

and in the case of new house con-

struction to coordinate brand and type

Control via computers is a logical

step. Model intelligent houses of fu-

ture has been in nineties (in the last century) presented as computing

center with computer in each room.

connected by Ethernet networks. Visualization and control via computer

is still possible to apply.

of buying technical devices.

Computers and touch

panels

Introduction - A rapid speed of development

System installations usually offer more possibilities of control. Control of one device from more places and more devices is common. In beginnings of specialised installation buses, about 25 years ago, they did think about simple controllers like smart wall switch. 15 years ago were added expensive touch panels and remote control via SMS message. Today, 5 years after first smartphone presentation and 3 years after first tablet placing on the market it is a matter of course local and remote control from these devices. Development of multimedia home entertainment has brought home cinemas, smart TVs, but also a requirement for home control from these devices.

Wall switch, thermostat and remote controllers

A line of controllers begins at ordinary wall switch or button. Its basic function - switch on/ off - is used for everyone. This basic fiction should maintain even in Smart House. The visitors or grandparents should have a chance to switch on or off by a native way. Wall switches in Smart Houses are usually short press buttons, stay in neutral position and have one or two colours status signalling LEDs. Often we place more switches side by side and give them functions we may never use in common installations. One of the differences in system installation compare to common installation is that we may match one button press with more actions of different type at once, according to user needs. We may combine for example downloading jalousies with switching on TV on some TV channel, switching on combination of lights suitable for watching TV and setting the temperature for pleasure value for sitting in a sofa.

For setting of required temperatures there are available wall thermostats for each room. Some manufacturers offer one centralized controller what may in a dialog watch and set temperatures in all rooms. Such controllers have usually display.



Image: An example of internal control web pages graphics (Insight Home)

Wall control device are today products, where design is very important. Companies are offering many materials and shapes. They add local functions like thermostat, dimmer, different kinds of audio, data and antenna sockets into completed design lines. The most exclusive design lines are addend by bus connections. A lot of manufacturers came to KNX/EIB standard and many manufacturers present its own solutions of wire and wireless

connection, usually oriented on some field and specific range of home control. They cover this by their products assembled into some completed solution.

Infrared remote controllers are today very often, with low price and many different shapes, thanks to consumer electronics. It is logical, that this kind of control device is offered by many manufacturers like one of possible control device. There are some specialised controllers, some of them are able to teach themselves control of other device, some are equipped by

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Image: An example of multimedia control from unified environment of house control (B&R Design, Netherlands)

But it is good to think about whether this solution is good for permanent control of all functions in house. They have importance for monitoring and control of large buildings, where is permanent surveillance in dispatching center or reception, and which are equipped by permanently working computers anyway. For resident houses or smaller buildings we have today solutions with lower consumption of energy and ready to provide visualization or graphical control interface fast without long start time of operation system ...

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manufacturers on multimedia field and as a part

of their offer is beside of own touch panels also

an offer of panels with iOS (Apple) and Android.

In most cases these are native applications connected with some operation system or its

version. Then, when we change the phone or upgrade new operation system, we have to re-

install the native applications. Another solutions

offer manufacturers, whose control the house

via internal web pages of the house. Such solu-

tions have no problems when we buy new phone.

The trend of house control via computer and monitor may be seen in touch panels. The importance of exterior design and finger touch control has created touch panels as new control device. Some solutions are adaptation of industrial solutions and the others are from the beginning oriented at end user in the house, competing with others by attractive design, impressive graphical screens and native logic control by images, icons and buttons.

This category has increased a lot in connection with automation of audio/video device, home cinemas.



Image: A favourite way of lights and jalousie control by icons on the hpuse floor plan (B&R Design, Netherlands)

To these devices has been step by step added possibilities of control lights, setting temperature, add images from camera system or video door-keeper etc.

Probably in this field first time the touch panel left the wall and moved to a bedside table, where replaced many controllers of separate devices. And the last step has been to put it out of charging holder on the table and become portable. It is a logical, that such panels are connecting by wireless channels.

Wireless technologies

Beginnings of intelligent wall switches has been connected with wire bus systems. The scale of possibilities for control has expanded with the development and miniaturization of radio technologies and creating the rules in assigned licence-free zones for transmission of simple short information of type "switch on/off", set temperature, and later on the massive entrance of wireless WiFi networks designated for high data transfer (e-mail, audio, images, video, ...).

Wireless wall switches, temperature sensors and appropriate relay switches or dimmers stay on one side of wireless technologies and are designated usually for simple and limited function like remote switch on/off, open garage doors, jalousie up/down, set the required temperature. On the market has come system Xcomfort, who has been a pioneer of totally wireless solutions for home automation. In principle it is a distributed system where each element have built-in list of functions and these functions are caused by requirements of other elements in the network. The advantage of wireless installations is simplicity of realization without cutting the walls, installing the wires, possibility to place the switch anywhere even on glass surface, but there is necessary to change battery at many elements. This disadvantage is trying to solve other system Enocean who is looking for a ways for battery free solutions, low consumption solutions collecting energy from button press, from surrounding world or even from temperature difference for instance at heating. Some manufacturers deliver systems integrating bus and

> wireless elements, where we may combine advantages and minimize disadvantages of both systems.

If the idea of intelligent house is especially in distribution of audio and video and multimedia entertainment across the whole house, what we call multiroom, we have to calculate with high volume of data and our choice of installation and wireless structure in the house have to reflect it. Here we should use common LAN network and its wireless version WLAN with today very popular technology WiFi.

Wireless technologies

The classic way of remote connection with intelligent house and its control from mobile phone is SMS message.



Image: Control of the whole house may fit in smart phone as well as a lot of other useful applications (Control4)



Image: Graphics of the control web pages may be individualized according to customer taste (Insight Home)

It's use is with coming of smart phones decreasing, but is still used and required. Such control needs to hold the message format, which the system reads. The advantage is the universality, because SMS message may be processed by any mobile phone. And even without internet connection.

Present offer of smartphones and tablets is almost absolute. Its portability and possibility to connect into internet network anywhere and at home direct to WiFi local network makes them universal, comfortable and practically cheapest graphical and mobile control interface for Smart House. A rapid start and penetration on smartphones and tablets market is reflecting by If there are added new elements into installation, there is no need to upgrade any application in the phones, all changes are immediately available via updated internal web pages.

Assistive technologies

Special control elements will be necessary in houses for the elderly people and flats for handicapped people. Even these will need control of such house.

They may use voice control, specialised touch panels with native logic adapted for seniors thinking.