Smart Control and ZigBee

As part of our new product development we are embracing the move towards internet enabled controls for our products

In 2021 we launched a Smart version of our popular market-leading Caspian fan convectors, and at the start of 2022 we extended our range of Smart products with the introduction of the all-new Multivector, which is a fan convector especially designed for use with heat pumps, and a new Smart version of Ecovector

The Smart enabled products can be controlled via an app for smart phones and tablets, or via an internet connected computer

To enable devices in the home, or in commercial applications, to be interconnected they need suitable data transmission pathways or communication protocols. ZigBee is one such communication protocol

Smith's Smart Control products use the ZigBee protocol. This enables the transmission between devices and thermostats which can be used as standalone localised controls, or with the integration of our hub control multiple thermostats using our ZigBee platform and controlled via app over the internet

Smith's has partnered with SALUS to develop the Smart family of products

Product Information

ZigBee technology

ZigBee is a wireless data transmission protocol used for two-way communication between devices. The two-way communication means that each device can both receive and send a signal. It is difficult to imagine Smart Home without ZigBee technology. It is used to manage devices that facilitate daily use of the house (control of lighting, blinds, heating), but also to increase security (sensors, alarms).

It is not only about the remote control of devices, but also about the creation of user-defined relationships between them. For example: when the motion sensor detects the presence of an inhabitant, the signal will be sent further, as a result of which the lights will turn on, the blinds will close, the temperature will rise. This happens automatically, without human intervention – once programmed, the devices send each other signals to "act". Modern building automation is based on scenarios (rules, relationships) that are created by the user according to his or her own needs.

Advantages of ZigBee

ZigBee system has been developed for home area network and is very suitable for this purpose. Its main advantages are:

- Low power consumption

- Instant access to the network

- Easy to use

- Easy to expand with new components

- Authenticated data transmission (transmission security)

- Wide transmission range: from 10 to 100 meters

- Affordable price of devices supporting the ZigBee standard

How is a ZigBee network organised?

A ZigBee home network can be organised according to three typologies: star, tree, and mesh. The point is that the elements working in it – the coordinator, signal repeaters, final actuators – should fulfil the communication scheme well, and thus fulfil their role in an automated home.
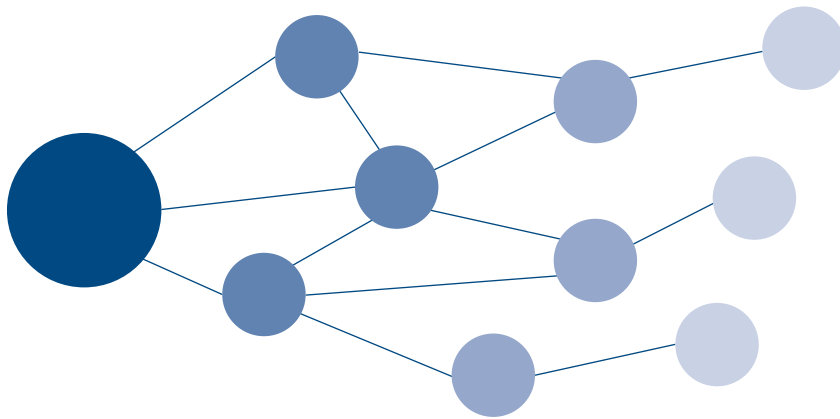
Star

A simple typology used for example in Bluetooth. A single device is the coordinator and all others are subordinate to it (slave) – they communicate directly with the coordinator and only with it.

Tree

A typology has a hierarchical arrangement. The coordinator is the "root" and manages the "branches". Each knot has elements subordinate to it. Final actuators (executors) may be located only at the end of the branch, they do not communicate with others. They only execute "commands". In this scheme, transmission delays are the most common.

Grid (mesh)

The mesh typology is not hierarchical. Here any device can communicate with another – either directly or through an intermediary device. This feature improves the functionality of the system, so it is considered to be the best type of ZigBee network organisation.

How ZigBee works with the Internet

The coordinating device is the heart of a SALUS Smart Home system that allows the user to connect devices so that they link up and interact with one another.

The coordinating device is also known as the Connection Gateway, or Universal Gateway.

What is it?

The coordinating device connects to the home WiFi and then allows the SALUS family of Smart home devices to in turn connect to the coordinating device. Unlike some connected home systems, the coordinating device is the only device that needs to be connected to the internet meaning that setup is quick, and it is simple to manage and grow the Smart Home system with more devices as required.

How does it work?

The coordinating device connects to the internet via standard WiFi or an Ethernet cable. Other Smart Home devices then in turn connect to the coordinating device via Zigbee wireless. Using a Smartphone, Tablet or PC with a simple app, the user can then link to the coordinating device via the internet and control Smart Home devices direct from the home or indeed anywhere in the world.

What is the difference between ZigBee, WiFi and Bluetooth?

Wi-Fi (Wireless Fidelity) is a wireless communication method used worldwide. It is used both in PAN (home area networks) and in all public places.

How does it differ from ZigBee protocol?

First of all, it consumes more power. Besides, ZigBee creates a mesh of connections between devices, extending the range up to 100m.

One device emits a signal for 10 meters or less. In the case of Wi-Fi, additional repeaters are needed to extend the range of the network through the mesh.

In contrast, both standards outclass **Bluetooth** in terms of range – here the range is only 10m. Power consumption is low, but data transfer requires connectivity with another device that supports this protocol. The devices have to "find" each other, "see" each other. Bluetooth is mainly used in mobile devices.

| **Coordinating Devices** e.g. Universal Gateway | **230v equipment closest to the coordinator.** 1st Layer of ZigBee Network; within 10m of Coordinator. e.g. Smart Caspian | **Other 230v devices in the network**. 2nd Layer of equipment in the network e.g. Smart Ecovector | **Battery Devices** e.g. Thermostat, Temperature Sensor |

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