TOSIBOX®

Smart home data networks made secure with TOSIBOX® technology

The "Lato" smart home offers a good example of successful implementation

The Lato ("Barn") smart home, where Laura Lahtinen and Elmo Blomqvist now live with their family, was completed in the spring of 2017. The heart and brain of Lato's building automation systems is the Wagon CoDeSys programmable logic, which communicates with products based on the KNX, DALI and Modbus protocols, such as the TOSIBOX® remote connection solution. Because data security issues are a regular concern, and the house is connected to the internet, the connections and firewalls are handled by TOSIBOX®.

Challenge

When Laura Lahtinen and Elmo Blomqvist decided to build the house they would live in, it was clear from the start that it would be a modern smart home. Among their priorities were energy efficiency, ecological choices and adjustability of conditions based on their desires as residents. The house's technology would have to be present, but at the same time function largely unnoticed, in the background. The same was true of the smart home's IT components.

Modern home functions are full of IT technology, which is connected wirelessly to the local area network, and thereby to the internet. This increases concerns about the security and vulnerability of information. A house could be the source of a great deal of data that would reveal the daily rhythms and habits of its occupants. The desired IT solutions for the house would prevent any outsider from being able to flash lights or otherwise hack into the movement sensors, cameras, routers, etc.

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Solution

The structure of the data network in the Lato home is simple: the operator terminal distributes the wireless local network over the whole house. The home automation, the heart of the functions of the Lato house, is implemented via Wagon CoDeSys programmable logic, which communicates with the actuators via various different protocols.

For its heating system, and to heat the tap water, the Lato house has a geothermal heating pump equipped with Jämä's RST inverter compressor. The ventilation unit is the Swegon Casa R5 Smart, with a rotary heat exchanger. The heating and ventilation systems communicate with each other in the automation system via the Modbus protocol. The Lato house's lighting system includes modern, dimmable LED technology, controlled via the Dali and KNX systems.

Outside of the home automation system, data communications are secured with the TOSIBOX® Lock 100 and Key system, which establishes a straightforwardly reliable and secure remote connection. This also has great importance when the IT system is first brought online, when the automation system is adjusted to the right settings, and also when the house is finished, and the system is in use.

TOSIBOX® functions at a very high data security level, regardless of the operators and type of internet connection. It is only possible to access protected data with a physical Key. Residents of the house are able to control features such as the house's lighting and heating remotely, through a mobile phone interface. The person who programs the home automation system can also adjust the devices' settings without compromising data security, by connecting to the house remotely using the TOSIBOX® Key.

"Our experience using the TOSIBOX® solution has been great: the package works wonderfully, and it was very simple to configure the devices. The user interface makes sense, and there are good instructions included. Whenever there have been any difficulties, it has been easy to contact technical support and get expert assistance."
Elmo Blomqvist,
smart home resident

Benefits

- Ease of use: no exceptional IT expertise is required to install the remote connection environment
- Works without problems in either a Windows or Mac environment, and over a mobile network
- Compatibility with the international KNX standard for home and building automation systems
- High-level data security protects the network connections of the automation system
- Tosibox's expert technical support can be easily reached
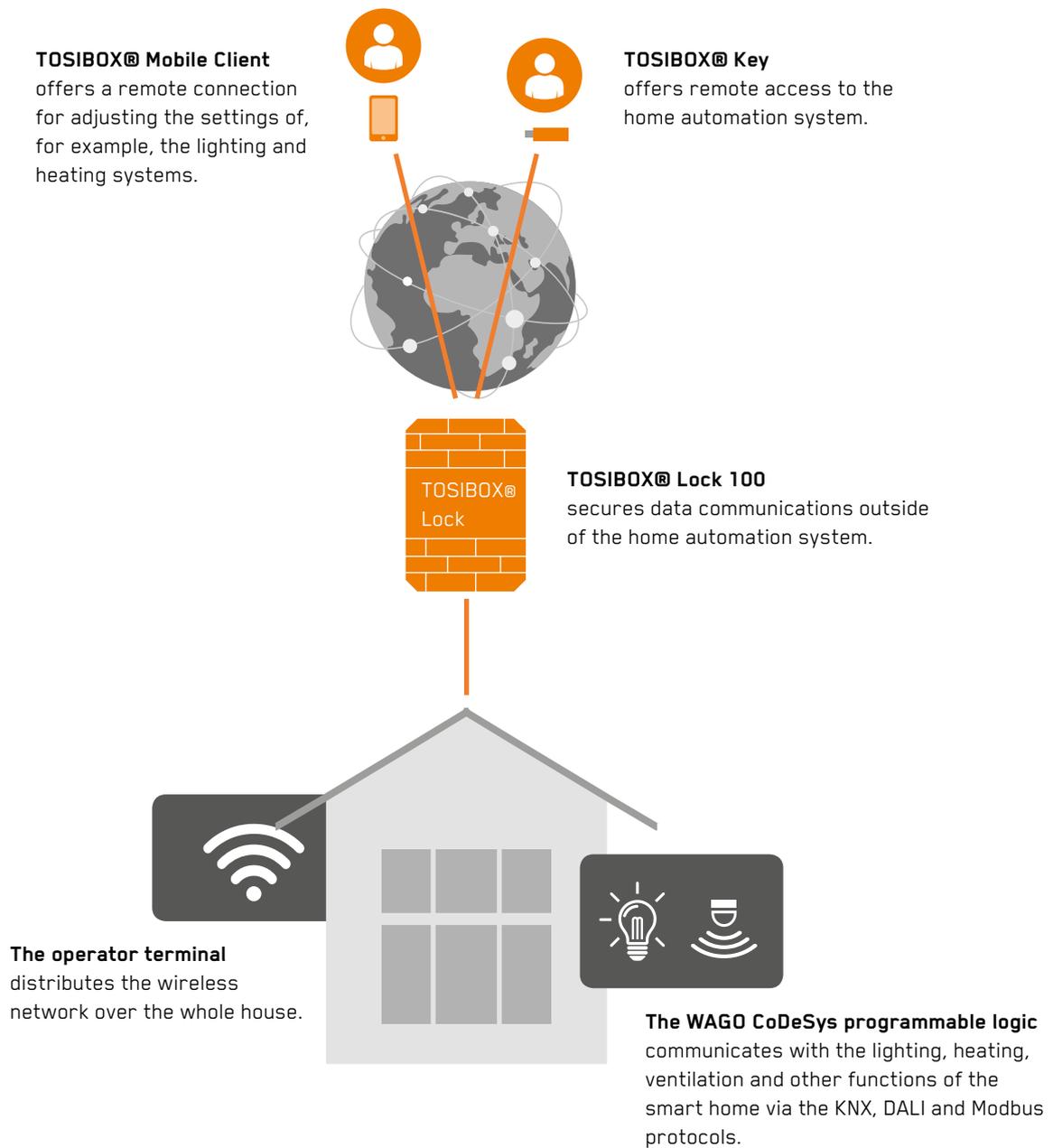
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Installation diagram

TOSIBOX® Mobile Client
offers a remote connection
for adjusting the settings of,
for example, the lighting and
heating systems.

TOSIBOX® Key
offers remote access to the
home automation system.

TOSIBOX®
Lock

TOSIBOX® Lock 100
secures data communications outside
of the home automation system.

The operator terminal
distributes the wireless
network over the whole house.

The WAGO CoDeSys programmable logic
communicates with the lighting, heating,
ventilation and other functions of the
smart home via the KNX, DALI and Modbus
protocols.

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