theben
energy saving comfort

Clever automation
KNX home and building control

KNX®

KNX – the Smart side of the building
saving energy while increasing comfort

KNX has long been established as the global standard for home and building automation. Controlling room climate, lighting, and blinds – all these are classic KNX functions. KNX technology is suited for functional buildings as well as for private homes. However, KNX is far more than just an installation system. It is as versatile as life itself.

KNX offers the technical opportunities to make a building a Smart Home or Smart Building, to use energy efficiently, and to increase comfort and quality of life. What you can do with KNX, and how you use KNX optimally for yourself and your customers, you will learn here.

Basics and product overview

Basics and introduction

Product overview

Applications and solutions

Lighting control

Sun protection

Room climate control

KNX visualisation

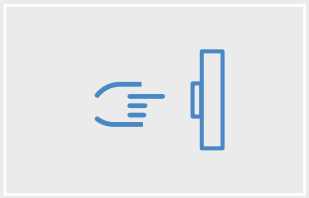
Selection matrix
The complete KNX product range

Actuators

Switching

Blinds / roller blinds

Lighting / dimming



Binary inputs

Sensors

Motion

Indoor use:

Outdoor use:

Presence

Indoor use:

Brightness

Indoor use:

Outdoor use:

Temperature

Indoor use:

Outdoor use:

Accessory devices

Climate control

Operating controls

System devices

Receiver

Humidity

Indoor use:

Outdoor use:

CO_2

Indoor use:

Wind

Outdoor use:

Time

Indoor use:

KNX – a technology
and its unlimited possibilities

Whether universities, schools, or other administrative and office buildings, nursing homes and hospitals, museums, hotels, or private homes – KNX makes more of it. The advantage of a KNX installation is its versatility. Via KNX, all building functions can be linked, programmed, and controlled. Starting with heating, ventilation, and room climate control, via lighting and shading, up to alarm, safety and information systems. All these functions can be controlled automatically via intelligent sensors, manually at the control units inside the rooms, or centrally via a visualisation – in the house, or in the move via smartphone or tablet.

Theben, KNX and the KNX Association – the fieldbus and its history

KNX stands for "Konnex" or "Connectivity" (connection), and it is a fieldbus for building automation. KNX resulted from merging the European organisations EIBA, EHSA, and BCI, which strived for a common standard of the back then existing field buses. Today, KNX is the global standard for house and building automation (ISO/IEC 14543). Worldwide, there are more than 44,000 trained KNX partners in 125 countries. The directives for KNX technology are defined and regulated by the KNX Association, to which today over 370 companies belong, worldwide. KNX thus stands for extremely high investment and future security.

Theben joined the association as one of the first members, and as a member of the Executive Committee, actively influences the development of KNX technology. Since 2015, Theben is also a member of the KNX Technology Committee. Theben – a competent partner all around KNX.

Further information at www.knx.org

KNX – sensors and actuators
How everything interacts

KNX is like the bodies nervous system, which is equipped with sensors and actuators. Everything the sensors detect is sent to the actuators, as a command. The actuators on their part trigger the desired response: They switch on the light when it gets too dark, they heat when it gets too cold, and they control the blinds, when the sun gets too bright. The topology is extremely versatile: line, tree, or star structures are possible.

KNX devices are connected to the KNX bus which in many cases is the also the power supply to the device, for example presence detectors. While in conventional systems control and energy distribution are interconnected, KNX participants communicate using their own line network.

The line network of a KNX installation is divided into sections, so-called lines, and structured hierarchically. The lines are logically and physically interconnected via line or area couplers. Each line has a power supply, which can supply up to 64 participants, depending on the individual design. A line can be extended with up to three line amplifiers by further 64 participants each.

15 of these KNX lines make up one area. 15 areas can be linked with each other via an area line, the so-called "backbone". Minus the system components, up to 58,384 KNX devices can be installed in one system.

ETS – the software for every KNX installation

The KNX bus devices communicate via data telegrams. Assignment between the individual participants and configuration of the functions is made by using the so-called ETS, the "Engineering Tool Software".

The ETS has been created by the KNX Association and is constantly enhanced. It is the common base of all KNX installations. All KNX devices have to be certified by independent institutions. After successful certification, the device-specific data can be imported into the ETS. In this way, KNX installations can be implemented independent of the manufacturer.

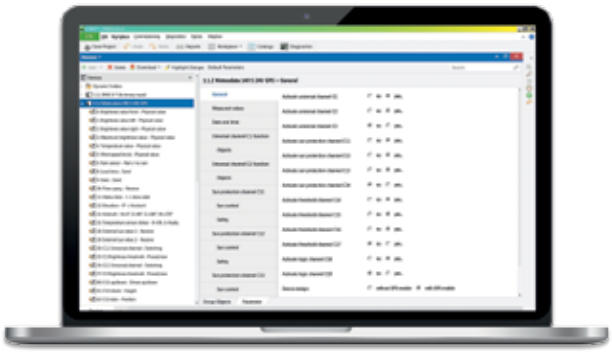
Thus, ETS programming of a KNX building installation is as versatile as life itself. To tell when and what should take place and in which room, can be a complex task, which requires foresight and flexibility. The advantage of KNX: Functions of a system can be reprogrammed any time via the ETS.

Costs and benefits – KNX pays off

The question you will hear over and over again, and which you might be interested in as well: KNX – is it worth it? The answer: a clear yes.

Especially with new buildings, if the building intelligence is comprehensive, and if numerous functions have to be linked with each other. KNX is suited for private single-family houses, as well as for administration, office, or industrial buildings.

Even if the initial costs are, in some cases, higher than with a conventional installation, a KNX installation quickly pays off after the first changes in use. Many functions, such as scene controls, or central visualisation could not be implemented without bus technology. More comfort, higher energy efficiency, and a higher quality of life in the long term.



- **KNX** – simplifies planning and reduces the effort for complex requirements
- **KNX** – combines various trades
- **KNX** – is open to changes and extensions
- **KNX** – allows central visualisation and control of building functions
- **KNX** – reduces operating and energy costs
- **KNX** – increases living comfort and reduces energy consumption
- **KNX** – offers extremely high investment and future security

Theben KNX product range
in detail

KNX MIX2 actuators
complete, flexible, extendable

The Mix does it
Only Theben offers this

Switching, dimming, controlling, regulating and also saving space in the distributor – not to mention time and money: The KNX MIX2 series from Theben makes it possible.

The complete range of KNX MIX2 actuators opens up new design options in the realm of building automation. All you need is a base module to which up to two extension modules can be connected. In this way, you triple the number of output channels for each bus device, and you can switch lights, dim the light, control sun protection or regulate the heating – using the modules of your choice. Window and door contacts, as well as switches and push buttons can be integrated via the binary input.

This clever combination saves space in the distributor, and cash. Why: Only the KNX MIX2 base module has a bus coupler. It can be removed and is quickly and easily replaced, if required. It is also cheaper, because the extension devices can be easily connected to it. Only Theben offers this.

The KNX MIX2 series is ideal for the automation of rooms and single-family houses. For example, if you want to control lighting, sun protection, and heating.

Apart from the flexible, because easily expandable, KNX MIX2 series, there is the inexpensive compact KNX FIX2 version for less complex applications – ideal for use in public buildings, offices, functional and administrative buildings, or even in hotels and schools (see pages 20/21).

Removable intelligence: Only the KNX MIX2 base module has a bus coupler to which the extension modules can be connected. If needed, it can be easily removed and replaced.

Mixing in series
Everything KNX desires

Base module (G) + maximum 2 extension modules (E)

MIX2 benefits at a glance

1. Removable bus coupler

The installer fits the base module (G), the system integrator configures the bus coupler – at the office, comfortable and practical. Just before start-up, the module is simply plugged in – done. That is cheap, because for installation and wiring it is not absolutely essential that an installer with bus knowledge be on site.

2. Inexpensive extension devices

As only the base module is fitted with a bus coupler, this reduces the costs for the extension devices (E) – and due to the saved system devices – by up to a third. It pays off. Especially in property construction. Count it up!

3. Flexible expandability

With KNX MIX2, controlling lighting, dimming, heating, climate or sun protection is not only not a problem, but desirable. With MIX2, you create an individual solution, which is customized to each room and its specific needs. Only Theben offers this flexibility.

4. Clearly arranged application

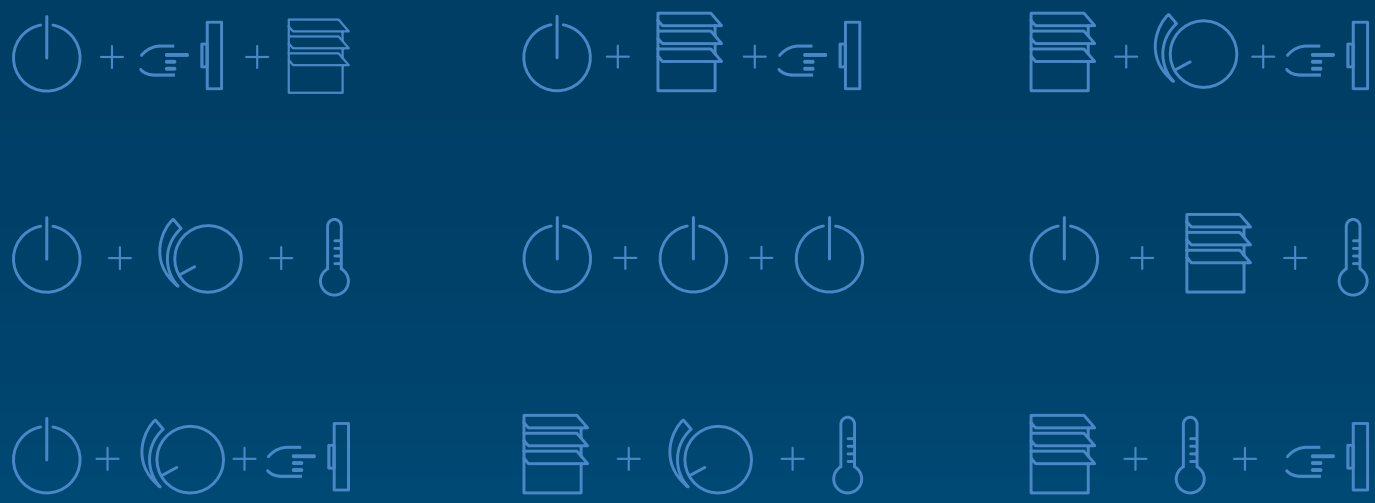
The configuration menus in the ETS are not only identically structured over all actuators, but also very clearly and intuitively arranged. This makes programming much easier: Projects are implemented easier, faster, and thus cheaper. Learn more about it on page 16.

MIX2 actuators - the video
intelligent, flexible, expandable

In an easily understandable way, our MIX2 videos show you the various advantages of the MIX2 series.

YouTube

www.youtube.com/TheThebenAG



A good mix – with 129 functions and up to 729 combinations

Switching

As you want

On/off with and without delay or staircase light with forewarning – as for instance the 4-fold C-load switch actuators – offer you new freedom of action on up to 12 channels. They feature current recognition and are designed for higher lamp loads.

Switch actuators
MIX2 RMG 4 U KNX
MIX2 RME 4 U KNX
MIX2 RMG 4 I KNX
MIX2 RME 4 I KNX
MIX2 RMG 8 S KNX
MIX2 RME 8 S KNX
MIX2 RMG 8 T KNX
MIX2 RME 8 T KNX

Dimming

But right

No flickering, an attractive, evenly rising brightness level with all currently available LED lamps – Theben's universal dimming actuators have already proven themselves on the market. Without exception, they have been enthusiastically received. They are considered to be one of the best dimming actuators of all.

Dimming actuators
MIX2 DMG 2 T KNX
MIX2 DME 2 T KNX

Blinds

Flexible control

With the switch/blinds actuators you can switch and control as you like. From 4 to 8 or 12 blinds or 24 switching channels. Or mixed. Everything just with three modules. This gives you more freedom in the use of the channels. Also, because you can assign them as you please afterwards.

Switch/ blinds actuators
MIX2 RMG 8 T KNX
MIX2 RME 8 T KNX

Blinds actuators
MIX2 JMG 4 T KNX
MIX2 JME 4 T KNX
MIX2 JMG 4 T 24V KNX
MIX2 JME 4 T 24V KNX

Heating

Can be so cheap

With the heating actuators, Theben offers you the possibility of capturing the temperature in the individual rooms with affordable temperature sensors. Temperature control takes place in the actuator itself, the set point specification is for instance set centrally via the KNX visualisation theServa.

Heating actuators
MIX2 HMG 6 T KNX
MIX2 HME 6 T KNX

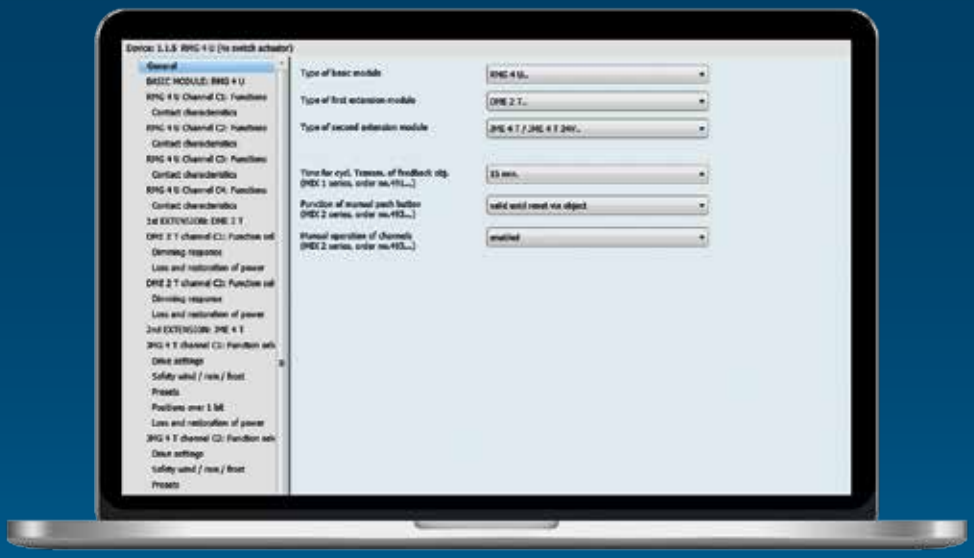
Binary inputs

Universal usability

Theben binary inputs cover the full range of contacts and voltages – whether floating contacts, 24 V, or 230 V. Each of the binary inputs offers six of them. That means more flexibility and greater investment security. Also, because in case of maintenance or service, each channel can be tested via manual operation.

Binary inputs
MIX2 BMG 6 T KNX
MIX2 BME 6 T KNX

Clearly arranged, structured, intuitive
MIX2 configuration menus



One for all
MIX2 data base for the ETS

All MIX2 actuators are listed in one common KNX data base. Once loaded, you have the applications stored in the ETS over all different MIX2 actuators. Depending on project and requirement, the desired actuators can be selected via drop-down menus. Even afterwards, in case an extension module with a different functional range is needed. Only Theben offers this.

Uniform user guidance

Whether dimming actuator, switch actuator, or blinds actuator – the application design in the ETS is identical over all different MIX2 actuators. Independent of whether you want to use the respective actuator as a base module or an extension module.

Versatile setting options

Hardly any other manufacturer provides you as many setting options for programming as the MIX2 actuators from Theben. Yet, programming remains intuitive: The structure across actuators and the navigation menu make it possible.

High investment security

MIX2 is expandable. Even afterwards. Via the two drop-down menus for the "1st and 2nd extension module", different modules can be selected and configured for the corresponding project. In this way, MIX2 provides high investment security and inexpensive programming.

Common data base

We have combined all MIX2 actuators in one data base. Your advantage is that not every actuator has to be loaded separately.

Stepless, flicker-free, expandable
KNX MIX2 universal dimmer actuator

Dimming LEDs in harmony
Today and in the future

Light elements such as LEDs, halogen and energy saving lamps can be dimmed steplessly with the proven KNX universal dimmer actuators of the MIX2 series from Theben. Optimised dimming curves provide – according to the particular lamp – a harmonious, stepless dimming response.

Optimised dimming curves

In the KNX programming software ETS, various dimming curves are stored, which correct the dimming response appropriately depending on the lamp used, thus ensuring stepless dimming.

Updatable: Reloading dimming curves

New dimming curves – e.g. for future lamps – can be imported via ETS, thus ensuring your investments are well-protected.

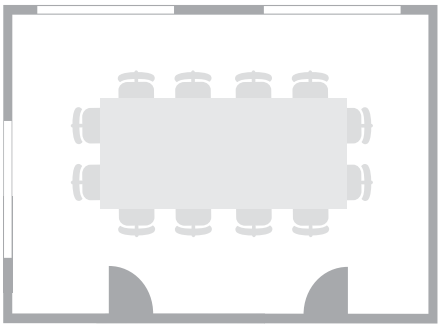
Versatile Scene function

The DMG 2 T KNX – similar to the RMG 8 S KNX switching actuator – can be used to save different scene functions.

Fast start-up

Quick function tests for start-up are possible via 4 buttons (25 %, 50 %, 75 %, and 100 %) even without bus connection. The bus module can be attached later.

Exemplary room solution
with MIX2 actuators



Conference room

1. Manual switching/dimming of lighting, blinds and sun protection
2. Message "room occupied"
3. Scene controls (incl. a scene for switching off, moving up and vacation of room)

Operation optional via conventional buttons with KNX button interface, via multifunction display VARIA 826 S KNX, or via KNX visualisation theServa.

Hotel room or apartment

1. Manual switching/dimming of lighting and blinds
2. Scene controls
3. Fan control
4. Central switching off via Hotel Card switch
5. Emergency alarm in the bathroom
6. Monitoring of windows for room climate control and outdoor monitoring
7. Message "Do not disturb" and "Clean"

Operation via conventional buttons with KNX button interface.

Floor of a single-family house

1. Manual switching/dimming of lighting
2. Fan control
3. Room heating control
4. Central switching off

Operation and temperature measurement via KNX button of various manufacturers.

Base module RMG 4 U KNX

- LED lighting of wall
- Message "Occupied"

Extension module DME 2 T KNX

- LED lighting ceiling

Extension module JME 4 T KNX

- Blinds/curtains
- External blinds

Base module BMG 6 T KNX

- Card switch (hotel) Emergency alarm in the bathroom
- Window contact

Extension module RME 4 I KNX

- Socket outlets left/right bed
- Socket outlet floor/table lamp
- LED lighting

Extension module RME 8 T KNX

- Corridor LED lighting
- Bathroom LED lighting
- Bathroom lighting, mirror
- Bathroom fan
- 2x blinds/curtains
- 2x messages

Base module HMG 6 T KNX

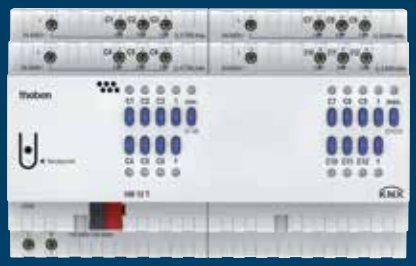
- 6x heating circuits for radiator or underfloor heating

Extension module RME 8 S KNX

- Sleeping room socket outlets, bed
- Sleeping room LED lighting
- Corridor LED lighting
- Bathroom LED lighting, ceiling
- Bathroom LED lighting, mirror
- Toilet lighting
- Toilet fan

Extension module DME 2 T KNX

- Children's room 1 LED lighting
- Children's room 2 LED lighting



Ready, steady, optimal
KNX FIX2 actuators for functional buildings

Made for the larger KNX actuators for the project business



Those who like it compact and can go without flexibility will find the FIX2 simple actuators to be the perfect alternative for the MIX2 actuators. Moreover, an affordable one. For example, the switching/blinds actuator RM 16 T KNX with 16 relays can control mixed lights and blinds and is perfectly suited for use in property construction: for instance in office buildings, public buildings, educational facilities or hotels. Wherever lighting and sun protection control are required in one room.

Dimming actuator

No flickering, a smoothly rising brightness level with all currently available LED lamps –Theben's universal dimming actuators have already proven themselves on the market. Without exception, they have been enthusiastically received. They are considered to be one of the best dimming actuators of all.

Switch actuator

On/off with and without delay or staircase light with forewarning – the 4-fold C-load switch actuators, for instance, offer you new freedom of action on up to 12 channels. They feature current recognition and are designed for higher lamp loads.

Switch/blinds actuator blinds actuators

With the switch/blinds actuators you can switch and control as you like: 8 blinds or 16 switching channels – or mixed. This gives you more freedom in the use of the channels. Also, because you can assign them as you please afterwards.

Binary inputs

Theben binary inputs cover the full range of contacts and voltages – whether floating contacts, 24 V or 230 V. Each of the binary inputs offers six of them. That means more flexibility and greater investment security. Also, because in case of maintenance or service, each channel can be tested via manual operation.

Heating actuator

With the heating actuators, Theben offers you the possibility of capturing the temperature in the individual rooms with affordable temperature sensors. Temperature control takes place in the actuator itself, the set point specification is set centrally via the KNX visualisation theServa.

swiss perfection swiss perfection swiss perfection swiss perfection

Multiple award winning KNX presence detectors thePrema from ThebenHTS

product design award 2014

PLUS X AWARD® 2014 achieved for: Innovation, High Quality, Design, Functionality

PLUS X AWARD® honored as: BEST PRODUCT OF THE YEAR 2014

GOOD DESIGN

KNX presence and motion detectors for energy-efficient lighting control



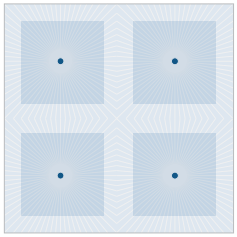
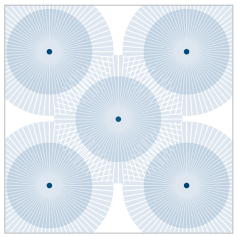
With the Theben presence detectors, you have every option for energy-efficient and intelligent lighting control. In addition to classic use for lighting control in offices, corridors and public buildings, you can also control heating and air-conditioning depending on presence. This lets you save energy costs and considerably reduce CO_2 emissions.

Presence detectors work according to the same principle as motion detectors: They detect thermal radiation in their surroundings, that is in their detection area. If thermal radiation is detected in the detection area, for example caused by a person approaching the presence detector, the presence detector converts the radiation into a measureable, electric signal, and the light is switched on.

The difference between motion and presence detectors lies in the sensitivity of the sensors. Presence detectors have much more sensitive sensors than motion detectors and detect the smallest of movements. The sensitive sensors divide the detection area evenly into up to 1000 zones. Like on a chessboard, the zones run through the entire detection area. Even minimum changes in the thermal image, such as typing on the keyboard in an open-plan office, will be detected.

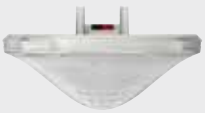
Light measurement is another difference. A motion detector measures brightness once, when the light is switched on because of a movement. Presence detectors measure the brightness permanently: If a set brightness value is exceeded, the presence detector switches the light off or dims it down – even if it detects movement.

In contrast to presence detectors with a circular detection area, presence detectors with a square detection area ensure optimum coverage of rooms without unnecessary overlappings or gaps.

KNX presence detectors

theRonda P KNX
Circular detection area of up to Ø 24 m
360° detection angle



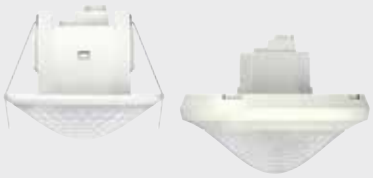
thePrema KNX
Square detection area of up to 10 x 10 m
360° detection angle

PlanoCentro KNX
Square detection area of 10 x 10 m
360° detection angle

KNX motion detectors

PresenceLight KNX
Square or rectangular detection area
with up to 8 x 8 m I 360° or 180° detection angle

SPHINX KNX
Circular detection area of up to Ø 7 m
360° detection angle



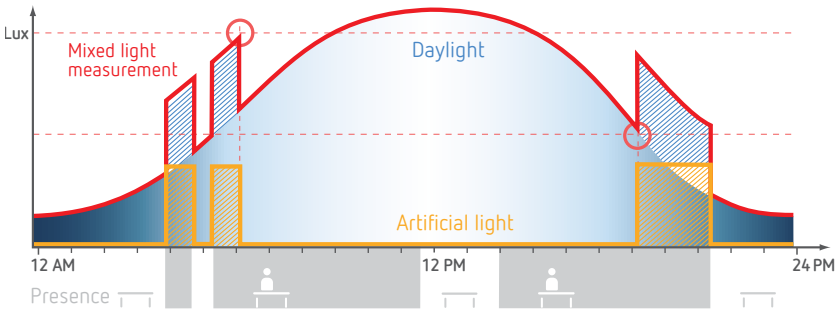
theMova KNX
Circular detection area of up to Ø 24 m
360° detection angle

Light measurement in detail

Lighting control using presence detectors is based on detected movement on the one hand and on light measurement on the other. Presence detectors permanently measure the brightness inside the room. Through this permanent light measurement, the presence detector is able not only to switch on artificial light when there is not enough daylight, but also to switch it off again when there is sufficient daylight. It sounds very easy, but in fact the presence detector must be able to assess, whether there is enough daylight after switching off the artificial light.

Switching operation

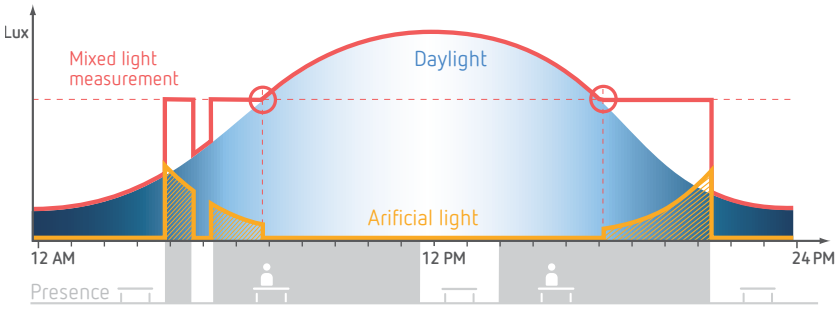
During switching operation, the presence detector measures the sum of artificial light and daylight. In order to be able to switch off the artificial light at the right moment when there is increasing daylight, the presence detector must know the proportion of artificial light (see fig.). This value is automatically learned by the detector, by constantly analysing the switching proces ses for the lighting in the room. This enables it to calculate the current daylight intensity at any time from the measured total brightness. The advantage of mixed light measurement is that it works with any light source – whether LEDs, halogen or fluorescent lamps. Mixed light measurement is the basis for constant light control.



Constant light control

With constant light measurement, the presence detector permanently measures the sum of natural and artificial light (see fig.). It determines the desired brightness value from these two light sources. On a misty or rainy morning the natural light is less. In this case, the presence detector increases the proportion of artificial light, in order to reach the desired brightness in the room.

If the sun breaks through in the course of the morning and there is more natural light through the windows, the presence detector reduces the proportion of artificial light. The brightness level in the room therefore remains constant, regardless of the amount of natural light. Typical applications: rooms in which a specific brightness level is required by law or standards.



Planning and installation
Correct installation of KNX presence detectors

For optimum functioning of the presence detector and to avoid sources of interference, a few points have to be considered during installation: Everything inhibiting the sight of the presence detector must be avoided, such as suspended lamps, partitions, shelves or big plants. Sudden temperature changes in the surroundings of the presence detector – for instance caused by switching fan heaters or fans on or off – simulate movement. Lamps which are switched on or off in the vicinity of the detection area (e.g. halogen lamps at a distance of < 1 m) simulate movement and can lead to incorrect switching. Moving objects, such as machines, robots etc. simulate motion signals or temperature differences. Slowly warming objects, such as heat radiators (lateral distance from lines and radiators > 0.5 m), IT equipment (computers, screens), sunny surfaces, or room ventilation systems do not disturb the function of the presence detector, as long as the warm air is not directly pointed at the presence detector.

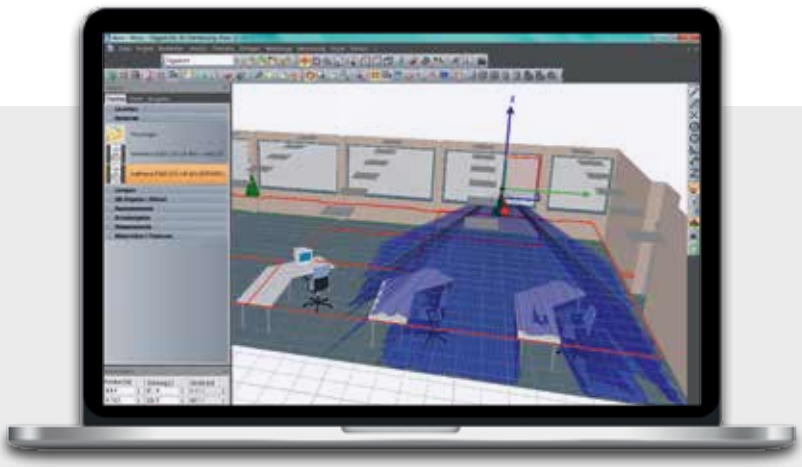
Caution: Do not install presence detectors next to suspended lamps, partitions, shelves, and indoor plants or devices that simulate motion, such as fans or machines.

Free planning software
for safe detector positioning

Those who want to position the light correctly right from the start will benefit from the Relux light simulation, which is generally free of charge. Relux offers professional planning software for development and implementation of complex lighting control tasks. The software for planners, architects and light designers is based on lighting solutions from various manufacturers and is appreciated by its users around the globe.

Theben is Relux member in the sensors product group. More info at www.relux.com

RELUX®
light simulation tools



Simple and efficient
Practical advantages of KNX presence detectors

Due to their very fine sensor technology, Theben KNX presence detectors detect even smallest movements and temperature differences. In this way, they allow to exactly adjust light and climate to the needs of inhabitants and users. Depending on the model, the various presence detectors are available in the colours black, white, grey, silver or in special colours upon request.

Square detection-area

The square detection area is ideal for most rooms in which presence detectors are installed. In this way, the individual detectors can be perfectly arranged. Without any gap or unnecessary overlappings. Without blind spots. This makes planning easier, reduces the installation effort, saves energy and lowers costs – because, due to the square detection area, usually fewer detectors are needed.

High installation height

Presence detectors in entrance halls or warehouses must reliably detect movements from a great height. The innovative optics ensure that the presence detector does not miss anything from an installation height of up to 10 m.

Easy to use remote control

With a remote control, settings can be easily made and changed from the ground. This is faster, shortens the installation time and lowers costs. And, it is safer.

Calibration of brightness measurement

The measured brightness value is influenced by the installation location, the incidence of light, the position of the sun, the weather conditions, as well as the reflection properties of the room and the furniture. With the room correction factor, the brightness measurement can easily be adapted to the conditions inside the room. This calibration ensures that the set point value in lux will be exactly observed at each workplace.

Self-learning time delay

Depending on how people behave inside the room, the time delay changes automatically. If the presence detector detects more movement, the time delay is shortened to just two minutes. If people hardly move or only rarely, the time delay is increased to up to 20 minutes. This saves energy, increases comfort and allows people to work in their most efficient way: active and lively or still and focused.

Illuminating short stays

In the event of a short stay, the light is only on for two minutes, because presence detectors "detect", whether and how long someone is in the room. This means that whoever enters the room for a short period of time does not automatically trigger the time delay that has been set and still does not have to go without light.

Innovative light measurement

The integrated, calibrated light measurement provides a reliable and continual measurement of the proportion of artificial and natural light. The presence detector measures the brightness by means of three directed light measurements, and can thus optimally respond to the diverse conditions inside the room. This ensures optimum lighting, even under difficult lighting conditions.

Most simple energy saving setting

"eco" stands for optimum switching behaviour. "eco plus" for maximum energy savings. By configuring, you decide what is best for you. Just as you want. Exactly how you need it. There is no easier way to save energy.

Configurable sensitivity

How sensitively presence detectors react to movements inside the room, is entirely up to you. The PIR sensors can be conveniently set using the remote control – according to the individual requirements of the users.

Sensitive room surveillance

A presence detector misses nothing. This is a particular advantage when the presence detector is integrated in the building system technology of large office or administration buildings. In this way, the building management always knows in which rooms people are still working.

Constant lighting control

The KNX versions feature constant lighting control, which permanently compares artificial light and daylight. They determine the desired brightness value from these two light sources. No matter how changeable the weather: The lighting conditions inside the room remain pleasantly constant.

Clever teach-in function

Lighting conditions change quickly – it is good if you can simply save them when they are exactly how you want them to be. With the clever teach-in function, the current lux value can be permanently saved. Without specialist knowledge. By the end user. It couldn't be easier.

Individual lighting scenarios

Bright daylight or softly dimmed light – you can choose between two lighting scenarios, which you can define whatever mood takes you. For example, in conference rooms where the light has to be dimmed for presentations. For exactly those lighting arrangements that are necessary in everyday situations. Settings can be made, saved and changed quickly and easily by using the remote control.

Intelligent parallel switching

Presence detectors allow for more than just increasing the detection area via master/slave switchings. Via master/master/parallel switchings, the lighting conditions can be set in the detection area of individual devices independently, and thus individually. This is an advantage if, for instance, in open-plan offices, different lighting conditions are to be balanced between areas close to windows and the room's interior.

Suitable for damp rooms

Presence and motion detectors with protection class IP 54 can also be used in damp rooms such as showers, changing rooms or toilets.

Fully or semi-automatic/ absence detection

Lighting control via the presence detector operates fully automatically for increased comfort or semi-automatically for greater energy savings. In "fully automatic" the lights switch on and off automatically. Light switching has to be completed manually in "semi-automatic/ absence detection mode". The lighting is switched off automatically.

All functions at a glance
KNX presence and motion detectors

Functions	theRonda P360 KNX	thePrema S360 KNX	thePrema P360 KNX	PlanoCentro KNX
Square detection area		●	●	●
High installation height	●		●	●
Innovative light measurement			●	
Calibration of brightness measurement	●	●	●	●
Self-learning time delay		●	●	●
Energy saving short stay	●	●	●	●
Clever teach-in function	●	●	●	●
Simplest energy-saving setting		●	●	
Configurable sensitivity	●	●	●	●
Sensitive room monitoring		●	●	●
Constant lighting control	●	●	●	●
Easy to use remote control	●	●	●	●
Individual lighting scenarios	●	●	●	●
Parallel switching	●	●	●	●
Suitable for damp rooms or outdoor use	❶			

❶ Only in AP version

PresenceLight 360 KNX	**PresenceLight** 180 KNX	**compact** passage KNX	**compact** passimo KNX	**theMova** S360 KNX DE	**theMova** S360 KNX AP	**theMova** P360 KNX	**SPHINX** 331/332 S KNX	**theLuxa** P300 KNX
●	●	●	●					
						●		
●	●							
●	●	●	●					
●	●			●	●	●		
●	●			●	●	●	●	●
●	●			●	●	●		●
●	●	●	●					
●	●	●	●				●	
●	●	●	●	●	●	●		●
●	●	●	●				●	●
●	●	●	●	●	●	●	●	●
●	●				●	❶		●

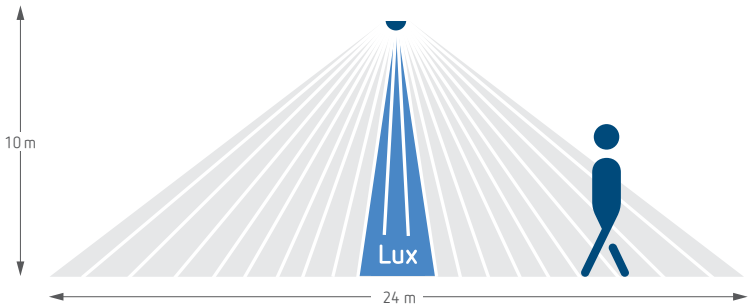
Technical data from page 84

KNX motion detectors
for indoor use

It does not always have to be a presence detector. The indoor motion detectors from ThebenHTS are ideal for all situations in which moving persons must be securely detected, for example in staircases, entrance halls, garages, basements or toilets. theMova is outstandingly well suited for this spectrum of applications.

theMova is good – and attractive: With its round, droplet-shaped design, the indoor motion detector nestles into the ceiling with unobtrusive elegance, setting a tone without forcing its way into the foreground. theMova is available in a Standard, and in a Performance line.

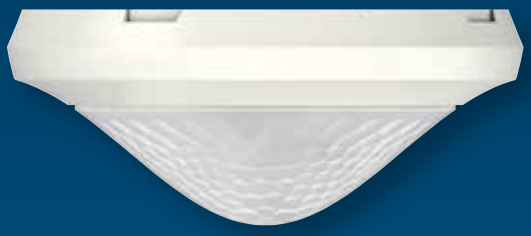
The smaller standard versions are intended for surface-mount or ceiling installation. The somewhat larger theMova Performance is intended for flush-mounting. theMova P is suited for surface mounting with an optional surface-mount frame. While the standard version is intended for rooms with a height of three and a half metres, theMova Performance exhibits its qualities with its incredible detection area of 24 m in diameter even in taller rooms.



Higher and wider

theMova P KNX detects walking movements from a height of up to 10 metres. This makes it the optimum motion detector for tall rooms, such as lounges, entrance areas, and warehouses (which also applies to thePrema P KNX and theRonda P KNX). With its giant detection area (24 m in diameter), theMova P KNX covers an area of 452 m^2.

Smaller, bigger, KNX compatible
theMova S and P KNX



PLUS X AWARD®
2014 achieved for:
High Quality
Design
Functionality

PLUS X AWARD®
honoured as:
BEST PRODUCT
2015/2016

swiss perfection swiss perfection swiss perfection swiss perfection swiss perfection

Advantages at a glance

High installation height

Motion detectors in entrance halls or warehouses must reliably detect movements from a great height. The innovative optics ensure that the motion detector does not miss anything from an installation height of up to 10 m.

Configurable sensitivity

How sensitively motion detectors react to movements inside the room, is entirely up to you. The PIR sensors can be conveniently set using the remote control – according to the individual requirements of the users.

Easy to use remote control

With a remote control, settings can be easily made and changed from the ground. This is faster, shortens the installation time and lowers costs. And, it is safer.

Clever teach-in function

Lighting conditions change quickly – it is good if you can simply save them when they are exactly how you want them to be. With the clever teach-in function, the current lux value can be permanently saved. Without specialist knowledge. By the end user. It couldn't be easier.

Illuminating short stays

2min

In the event of a short stay, the light is only on for two minutes. Since motion detectors "detect", whether and how long someone is in the room. This means that whoever enters the room for a short period of time does not automatically trigger the time delay that has been set and still does not have to go without light.

Suitable for damp rooms

IP

Motion detectors with protection class IP 54 can also be used in damp rooms such as showers, changing rooms or toilets.

Intelligent parallel switching

M M

Motion detectors allow for more than just increasing the detection area via master/slave switchings. Via master-master parallel switchings, the lighting conditions can be set in the detection area of individual devices independently, and thus individually. This is an advantage if, for instance, in open-plan offices, different lighting conditions are to be balanced between areas close to windows and the room's interior.

KNX motion detectors
for outdoor use

Comfort and safety – two aspects a KNX motion detector must cover. Nothing accomplishes these tasks better than theLuxa P300 KNX. Integrated in the KNX building system technology, it exactly detects, when and who it should guide the way.

Especially in larger areas, it is about detecting and automatically responding to streams of movements which have to be expected. For instance of employees, who enter the company premises in the early morning, and often leave late in the evening. Or employees and visitors of hotels, hospitals and administrative buildings. In all these cases, it is about the required control, but also a predictive lighting of entrance halls, access routes and connecting passages.

theLuxa P300 KNX (protection class IP 55) is available in white or black, and can be installed at the wall or ceiling, thanks to its swivelling sensor head. With a 300° detection area of up to 16 m, and creep under protection, theLuxa P300 KNX does not miss anything. Via the ETS, the motion detector can be easily integrated into the building automation, and it is easy to configure. Brightness thresholds, duty cycle, and sensitivity can easily be configured via the KNX visualisation theServa S110 KNX.

More flexible: ceiling and wall mounting

Thanks to its swivelling sensor head, thLuxa P300 KNX is also suited for ceiling installation. The motion detector and its included accessories (corner bracket, spacer frame) are available in white and in black. (Due: November 2015)

Detecting everything in a wide range
theLuxa P300 KNX

PLUS X AWARD
2014 achieved for:
High Quality
Design
Functionality

Various functions with numerous advantages

Comprehensive motion channels

4 channels

The four motion detector channels can be linked in a time-dependent manner for various lighting applications, such as switching or dimming, for instance as an orientation light. Functions, such as short-time presence, master/slave, fully automatic/semi-automatic device and two switchable time delays can be configured via ETS.

Precise time switch function

7 days

Functions, such as "locking", "permanent ON", "brightness threshold", and "change over time delay" can be called up in a time-dependent manner via the integrated time switch function with a simple weekly program.

Flexible universal channels

4 channels

The four universal channels respond, independent of movement, to temperature and/or brightness, and can thus be used as a twilight switch, for instance.

Integrated temperature measurement

°C

theLuxa P300 KNX has an integrated temperature sensor, which can be used for temperature-dependent operations.

Sensitive brightness sensor

D

The motion detector has an integrated brightness sensor, which can be used as a twilight switch.

Independent logic channels

Logic
4 channels

The "AND", "OR", and "XOR" operations of the four independent logic channels respond to current bus events. As initial object, switch commands, or percentage values can be sent, for example.

Easy to use remote control

theLuxa P300 KNX supports remote operation. 2 scenes and numerous settings can be easily made from the ground. This is faster, shortens the installation time and lowers costs. And, it is safer.

Various scene functions

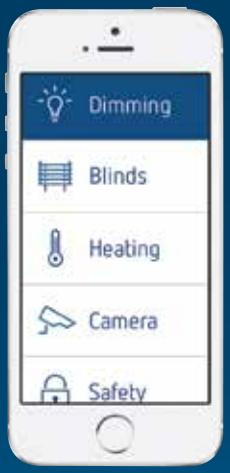
theLuxa P300 KNX is an enrichment to any scene. The motion channel can be incorporated into scenes in a most versatile way: "locking", "permanent ON", "brightness threshold", and "change over time delay".

Clever teach-in function

Lighting conditions change quickly - it is good if you can simply save them when they are exactly how you want them to be. With the clever teach-in function, the current lux value can be permanently saved.

Fast, convenient and easy to install

KNX visualisation theServa from Theben



Child's play!
KNX can be that simple



Whoever opts for KNX home and building automation also wants to operate it and configure it easily. theServa KNX makes that possible. From the living room, you can control the blinds in the bedroom, regulate the room temperature, or adjust the settings of the motion detector at the front of the house – without standing up, without effort. Of course, not only from the sofa, but from anywhere.

theServa consists of a fanless mini server for continuous operation and a high performance software. KNX building automation, which is intuitive to operate, is designed for private homes as well as smaller to medium-sized functional buildings. This allows everything to be visualised – from lighting, roller blinds, room temperatures and energy consumption. Configuration is as simple as could be with easy-to-understand icons, to which the particular rooms and functions are assigned. Windows 7 or a later version is a prerequisite. Those who want to keep everything in view can even integrate their IP cameras into theServa.

It couldn't be easier or faster. This is because the graphics are stored fully on the clients smart device: whether tablet, smartphone, touch screen or laptop/PC. This reduces loading times and ensures real-time response rates. Try it out – for example with the huge number of possible RGB light scenarios, which can be used to create any desired mood.

The attractive KNX visualisation
for users

theServa – this is a hard and software package, which lets you experience KNX building system technology. It consists of a mini server, configuration software, and mobile apps for all common mobile end devices. With theServa, installers can offer their customers lots of comfort with little effort.

This is how it works: The installer installs theServa mini server and configures the settings of the users, e.g. the operator or the home owner, and downloads the corresponding free iOS or Android app'. After registration at the server, data transmission is carried out. As only KNX group addresses, logic connections and time switches are saved on the server and no graphics are transferred from it, data appear on the smartphone practically in real time. Even new settings work without any noticeable delay. Configuration is simple, and it is based on a number of factory settings, which can be easily understood by the user via intuitive operating controls.

theServa app

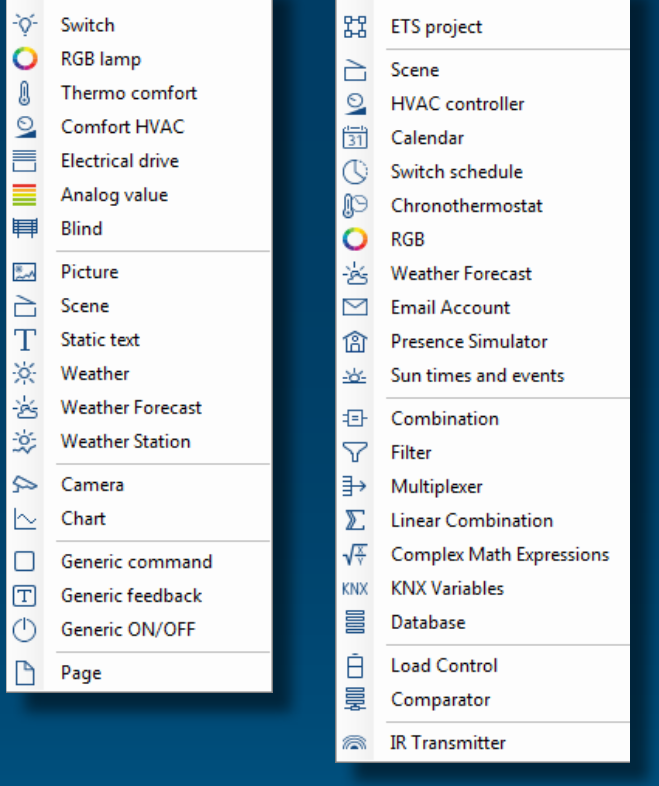
Available on the App Store

Download for Android

theServa:
The fanless mini server with KNX interface and Ethernet port fits everywhere.

theServa
Functions at a glance

Along with simple configuration, theServa features a number of pre-programmed functions, with which the installer can provide a lot of comfort to his customers without much effort. The simple RGB lighting control has already been mentioned. Operating controls for shades, or heating/cooling with individual zones are of course also provided. A convenient weekly timer, which can be set by rotary knob and copying function, is integrated as well. However, a few functions should be pointed out separately.



Individual scenes

By the press of a button, a scene triggers several commands, such as individual brightness values of certain lamps, combined with a specific position of the blinds. The "Scene" object can be freely positioned on the graphic interface, just as any other object.

With the "Record" function, individual commands will be saved on the server and can be directly called up via the icon switch or a KNX group address. Each scene can be called up by means of the time program. If desired, even the end user can create and change scenes.

Weather forecast

Although weather forecasts can be obtained from the Internet, it is difficult to integrate them in the KNX installation. It is easier to connect the weather forecast receiver Meteodata 139 KNX from Theben with theServa.

The station provides forecasts for the following three days at 6 hour intervals (wind speed, air temperature, sunshine duration, rain probability etc.) by using only seven group addresses. By using these data, heating and shade can be controlled with foresight. In this way, unoccupied rooms can be shaded in summer, in order to protect them from being heated too much by the sun.

Logic functions and calculations

Comprehensive logic functions an calculation options make theServa a universal tool. By using them, the installer can solve many problems in a project and fulfil specific customer requirements. Solar position calculation for instance can be used to control blinds and other shades more precisely than a mere time function. Adjusting the outdoor lighting to sunrise and sunset is also possible. Apart from standard logic functions, such as AND, OR, XOR, theServa features various filter and converter functions. Even complex mathematical calculations are possible.

Diagrams

With this function, KNX analogue values, such as temperature, wind, or power consumption can be recorded and then evaluated in a table or chart.

Page layout

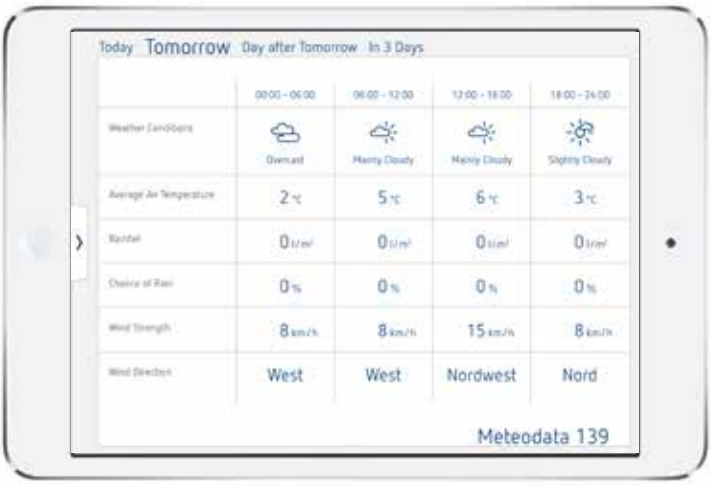
Page layout with theServa is child's play: floor plans are added, symbols are placed, and the first pages are created quickly and intuitively. This does not only shorten installation time, but programming costs can be reduced as well.

Tomorrow's weather
Meteodata 139 KNX*

Meteodata 139 KNX* receives the upcoming weather three days in advance. The receiver obtains the licensed weather forecasts from HKW via longwave – reliable data on temperature, hours of sunlight, probability of rain, and wind speed.

Displayed in six hour blocks, the data can be used in the KNX system for the anticipating control of heating and shading, in order to save energy. For instance in summer, to protect unoccupied rooms against heating up, by shading them. Or in winter, by reduced shading, in order to lower the heating effort by utilising the available sunlight.

Provision and transmission of the weather data by HKW is currently guaranteed until 2021-12-31. Any alterations of the transmission will be announced on the Theben website, at least 5 years in advance: www.theben.co.uk



Predictable

The weather forecast for the next 3 days is clearly segmented in 6 hour blocks. These can be displayed and called up any time in the KNX visualisation theServa.

Saving energy today with tomorrows weather

- Minimising heating expenses
- Using heat radiation effectively
- Controlling sun protection with foresight

Today's weather
Meteodata 140 S KNX

This weather station is a true all-rounder. It is transparent, compact in design, and optimally suited for glare protection: It automatically calculates the position of the sun and the sunlight incidence angle, and it detects wind, rain, brightness, and temperature. It provides all data necessary for the fully automatic control of blinds and sun protection of up to eight facades. Including sun position tracking.

Measurement and evaluation of the weather data take place directly in the device. To display the weather data, the VARIA 826 S KNX multifunction display is suited, for instance.

The Meteodata 140 S GPS KNX is equipped with an integrated GPS receiver, a heated rain sensor, three brightness sensors, six logic channels, as well as four additional threshold value channels for linking external KNX sensors.

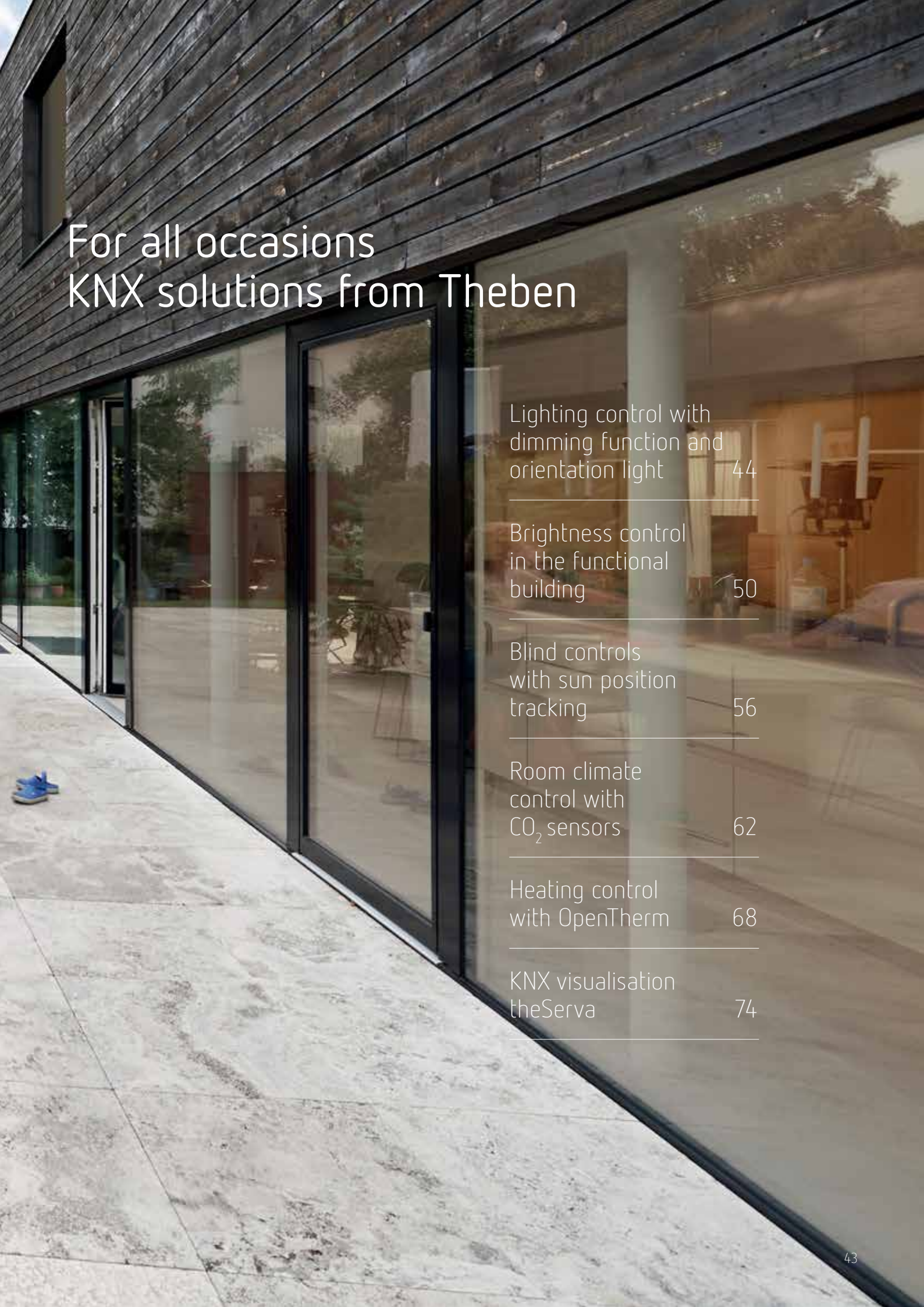
Meteodata KNX weather stations are also available as 24 V versions with and without GPS module, as well as a "basic" version without rain sensor.

Callable

Wind, rain, temperature and sunshine can be displayed on the multifunction display VARIA 826 S KNX.

For effective glare protection with sun position tracking

- Reliable detection of the sun position
- Precise temperature measurement
- Capacitive rain measurement
- Wind measurement independent of its direction



For all occasions KNX solutions from Theben

KNX lighting control from Theben
creates accents and provides orientation

Twilight is predictable. In the morning, in the evening. One can adapt to it. It sounds simple, but it is not – especially if the KNX installation has to be programmed accordingly. Many parameters have to be observed. The season, sunrise and sunset, the daily brightness values, the weather conditions.

But it is possible. Especially with Theben. For instance in front of entrances, accesses or on parking lots of companies, industrial plants, administrative buildings or housing areas. That is, in applications in which lighting is required especially at the start and end of work.

Here, KNX lighting controls from Theben create clear accents and provide orientation. Exactly then, when it is needed. Outdoor – and of course indoor.

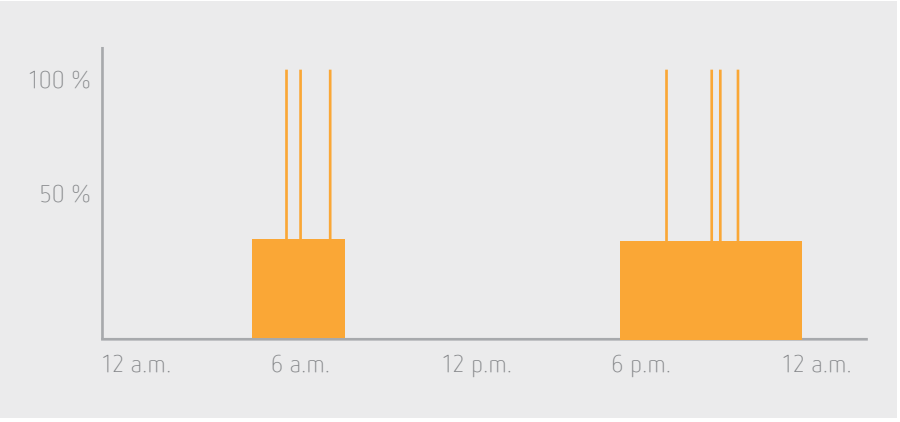
Pioneering lighting concepts, which are appreciated everywhere

It feels good to come home, and the light goes on – long before you reach the door. It feels safe, to have orientation light in the garden or on the parking place. It is convenient to find the way in corridors of hotels or nursing homes during the night, because softly dimmed light never leaves you in the dark.

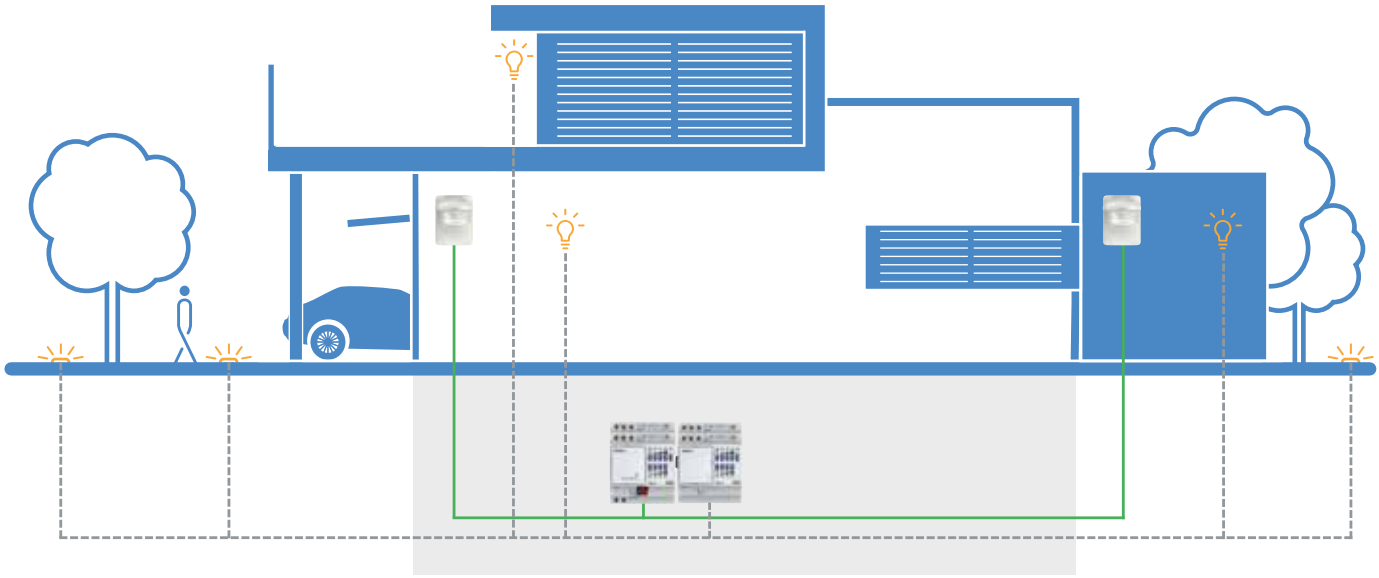
With Theben, comfort can be created easily – with theLuxa P KNX motion detectors and universal dimmer actuators, which always provide the desired brightness. Even at a specific period of time – in the morning, in the evening, or at night. Permanently or temporarily. With specific brightness values or with certain responses and time delays.

Basic principle of orientation light

In the morning and evening hours, a basic lighting of 40 % provides orientation. When motion is detected, the brightness is switched to 100 %. After a time delay, the lighting is softly dimmed down to the level of the orientation light.



Theben KNX lighting control
for buildings and outside facilities



Benefits at a glance

1. Large detection area and universal applications

- The outdoor motion detector theLuxa P300 KNX has a large detection area of up to 16 m and a separate creep under protection.
- It is suited for ceiling installation and wall mounting. Corner brackets for the installation at inner and outer corners, as well as spacer frames for lateral cable routing are included in the scope of supply.

2. Sophisticated applications

- theLuxa P300 KNX features change over between alternative values for brightness and time delay, which allows different values to be considered for different times of the day and situations.
- The most important settings, such as brightness and time delay, can be changed during operation via the KNX objects.
- In the universal dimmer actuator DMG 2 T KNX, various dimming curves are stored, which correct the dimming response appropriately, depending on the lamp used, thus ensuring stepless and flicker-free dimming of LED lamps.

3. High investment security

- Due to additionally up-loadable dimming curves, the universal dimmer actuator DMG 2 T KNX can also be adapted to future lamps.
- The dimming output of the universal dimmer actuator DMG 2 T KNX is 2 x 300 W/VA or 1 x 500 W/VA. If more output is required for future lamp developments, this can be achieved by connecting up to 4 dimming boosters in parallel, to up to 2000 W/VA.

Dimming actuator DMG 2 T KNX
dims like no other

Whether LEDs, halogen, or energy saving lamps – the universal dimmer actuators dim everything that can be dimmed: steplessly, smoothly and flicker free. With the KNX software ETS, Theben provides optimally tuned dimming curves for every lamp – updatable for future lamps. The dimming output is 2 x 300 W/VA or 1 x 500 W/VA. This dimming actuator, which can be expanded by two modules, is considered one of the best on the market.

Dimming booster DMB 1 T
does 'watt' you want

If the output of the dimming actuator is not sufficient, the dimming booster comes into play: Connected in parallel, the output can be increased to up to 700 W/VA. In the maximum expansion stage with four dimming boosters, this is 2000 W/VA.

Motion detector theLuxa P KNX
responds to every movement

This motion detector has a very large detection area of up to 16 metres. An advantage, especially with large building complexes, because a few detectors will suffice, in order to cover large entrance areas, parking lots, or accesses. It can be mounted on walls, or ceilings. Many of its functions, such as brightness and time delay can be easily changed with theSenda remote control, from the ground. Even more convenient from the sofa: via the KNX visualisation theServa.

Project example
KNX lighting control with orientation light

Corridor lighting control (orientation light/standby)

Motion detector theLuxa P300 KNX master device (M) object name		Universal dimmer DMG 2 T KNX object name		Notes
7	C1 dimming dimming value	2	DMG 2 T channel C1 dimming value	theLuxa sends the dimming value to the universal dimmer

master-slave connection

theLuxa P300 KNX master device object name		theLuxa P300 KNX master device object name		Notes
18	C1 parallel switching sending/receiving	18	C1 parallel switching sending/receiving	Slave devices report detected motion to the master device.

Functions of the KNX motion detector theLuxa P300 KNX

Comprehensive motion channels

The four motion detector channels can be linked in a time-dependent manner for various lighting applications, such as switching or dimming, for instance as an orientation light. Functions, such as short-time presence, master/slave, fully automatic/semi-automatic device and two switchable time delays can be configured via ETS.

Precise time switch function

Functions, such as "locking", "permanent ON", "brightness threshold", and "change over time delay" can be called up in a time-dependent manner via the integrated time switch function with a simple weekly program.

Flexible universal channels

The four universal channels respond, independent of movement, to temperature and/or brightness, and can thus be used as a twilight switch, for instance.

Integrated temperature measurement

theLuxa P300 KNX has an integrated temperature sensor, which can be used for temperature-dependent operations.

Sensitive brightness sensor

The motion detector has an integrated brightness sensor, which can be used as a twilight switch.

Independent logic channels

The "AND", "OR", and "XOR" operations of the four independent logic channels respond to current bus events. As initial object, switch commands, or percentage values can be sent, for example.

Easy to use remote control

theLuxa P300 KNX supports remote operation. 2 scenes and numerous settings can be easily made from the ground. This is faster, shortens the installation time and lowers costs. And, it is safer.

Various scene functions

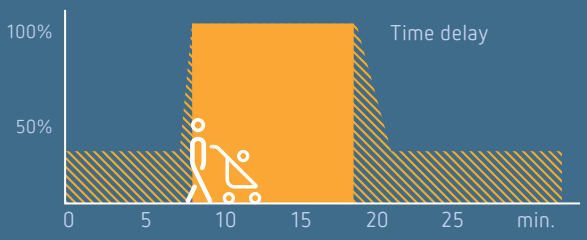
theLuxa P300 KNX is an enrichment to any scene. The motion channel can be incorporated into scenes in a most versatile way: "locking", "permanent ON", "brightness threshold", and "change over time delay".

Clever teach-in function

Lighting conditions change quickly – it is good if you can simply save them when they are exactly how you want them to be. With the clever teach-in function, the current lux value can be permanently saved.

7

Master 18



With only one object link, the brightness values for orientation light, maximum light, and for the time delay can be implemented.

2

Slave 1 18

Slave 2 18

A matter of setting

All values can be called up and set via the KNX visualisation theServa. Conveniently, easily, and safely from the ground.

ETS example

You can download the preconfigured project as knxproj. file at this link:

theben.de/ets01-en

Constant lighting conditions
Implemented across systems

We all sense temperature differently. Similarly, we all sense brightness differently: Too bright or too dark are elastic terms, and are understood in a different way by each individual.

However, we all know that light is an important asset. For several years, a growing number of experts has pointed out the health aspects of poor lighting, in numerous studies.

The challenge has been clearly defined: On the one hand, it is important to save energy and to lower CO_2 emissions. On the other hand, we want to permanently create good lighting conditions, under which people can work in a focussed manner without health burden. Theben offers you the appropriate solution.

Energy saving interplay of two open standards

Whether open-plan offices, classrooms, or seminar rooms: Near the window it is bright, while it is darker inside the room. Dusk and dawn, or rainy weather increase the effect. KNX building automation with constant lighting control ensures homogenous and energy efficient lighting conditions, which incorporates the DALI lighting control.

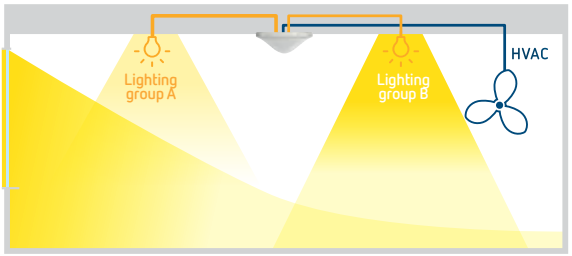
For this, Theben provides the two critical components: thePrema P360 KNX presence detectors, which optimally cover large rooms, thanks to their large and square detection area, and the DALI Gateway KNX, which forwards the KNX telegrams from the presence detectors to the DALI participants.

With the three directed light measurements, the brightness situation is exactly determined by thePrema P360 KNX. In this way, it is possible to implement a separate constant light control for each of the two groups of lights. The large saving potential: Thanks to the square detection area, less presence detectors usually cover the rooms better. This saves time and money for devices, installation and programming. Due to the exact light measurement and the corresponding lighting control via DALI Gateway KNX, highest energy efficiency is pre-programmed.

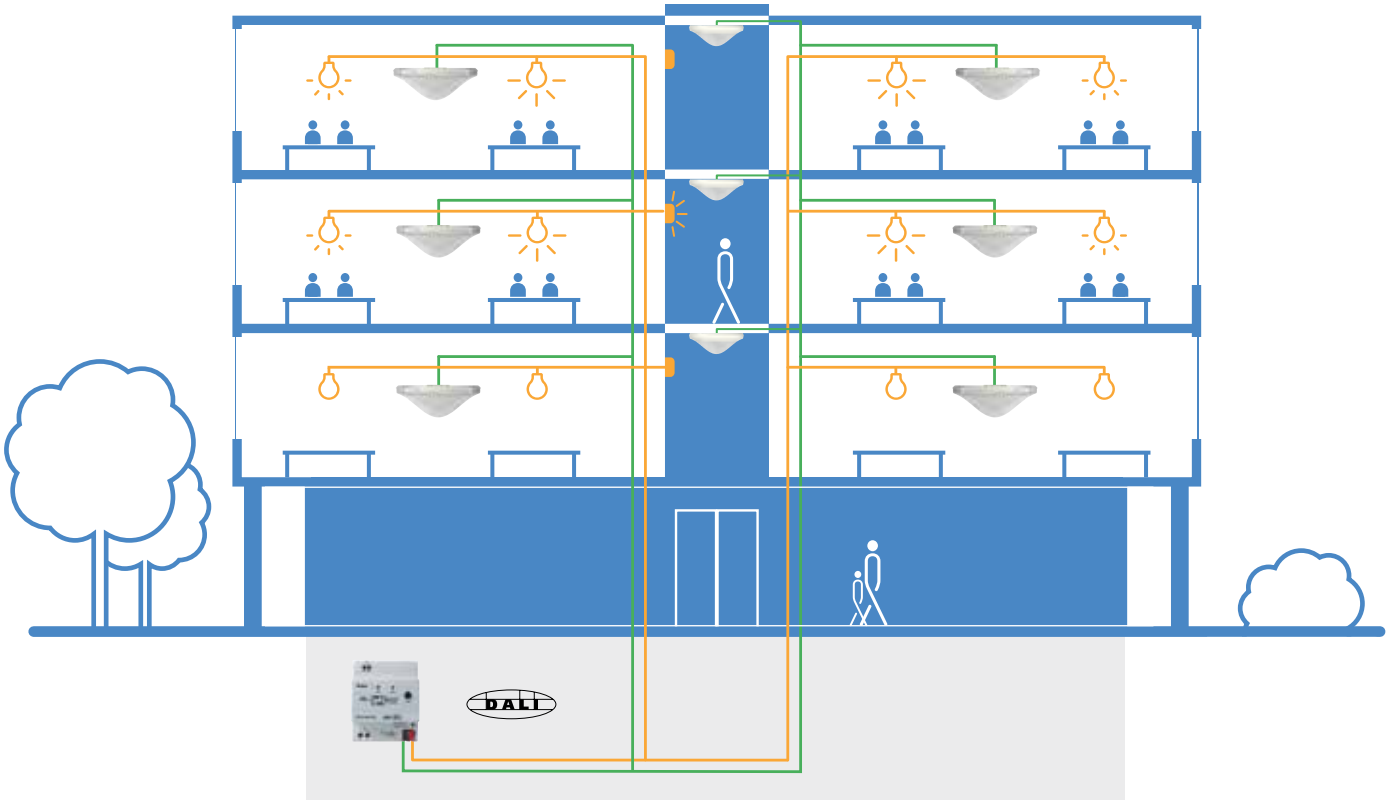
With the DALI Gateway KNX, 64 DALI participants can be divided into up to 16 group of lights. Between the lamps and the KNX building automation, information is exchanged bidirectionally. The advantage: The lamps cannot only be controlled, but failures of the EBs or lamps can be displayed in the KNX visualisation theServa.

Directed light measurement

Thanks to its differently aligned light measurement, the presence detector thePrema P detects the solar radiation and controls the lighting group near the window independently of the lighting group in the interior of the room.



Theben KNX brightness control
in the functional building



Benefits at a glance

High detection quality

- The presence detectors thePrema P and theRonda P feature four, partly overlapping, passive infrared sensors. The overlapping ensures a very close-meshed coverage, which reliably even detects sedentary work with only little motion.

Optimised energy consumption

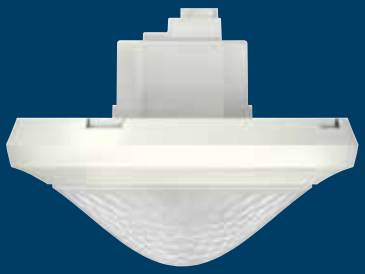
- The functions "Short-term presence for passage ways" and "Adaptive time delay" optimise the energy savings and thus significantly reduce energy consumption.
- The light can be controlled fully automatically via the detector, depending on the individually desired setting. Or semi-automatically: Here, the light can be switched on via the light switch. Switching off is done by the presence detector.

Greater comfort and flexibility

- With the presence detectors thePrema and theRonda, the most important settings, such as "time delay" and "brightness threshold" can be changed during operation via KNX objects.
- With the KNX visualisation theServa, parameters with an input object can be changed any time without ETS.
- Failures of the EBs or lamps can be displayed in the KNX visualisation theServa.

Presence detector thePrema P KNX
has everything under control

A 360° detection area of 10 x 10 metres, an adaptive 3 channel mixed light measurement, and 3 light channels – are only a few features which make thePrema P KNX the ideal presence detector for KNX building automation. The detector shows its brilliance if it does not only control the lighting, but also heating, ventilation and air conditioning via its two separate presence channels.



Presence detector theRonda P KNX
draws everyone into its circle

theRonda P KNX is an excellent addition to thePrema P KNX. Especially, if not only classrooms, but other large spaces, such as assembly halls, or the sports hall should be integrated into the KNX building automation. theRonda P KNX has a large, circular detection area of 24 m in diameter, and is suited for all applications with unusual room geometries, such as fan-shaped concert halls, or events halls.

DALI Gateway KNX
joins light and automation

The DALI Gateway KNX combines the DALI protocol of digital lighting control with the building automation across rooms. It controls up to 64 operating units with DALI interface and assigns a DALI address to each DALI participant. The DALI participants can be combined in up to 16 groups of lights, and be controlled via KNX, individually or via scenes. Which lamps shine full of atmosphere at which brightness, or in which RGB colour, all this can be controlled via the DALI Gateway KNX.

Push button interface TA 4 KNX
intervention desired

In some cases it makes sense to be able to manually intervene into an automatic lighting control. For instance, in order to permanently switch on or off the light at the blackboard in the classroom. The push button interface with 4 binary inputs provides the option of using conventional push buttons and switches.

Project example
Brightness control with presence detector and DALI Gateway

Corridor lighting control (orientation light/standby)

Presence detector theRonda P KNX object name	DALI Gateway object name	Notes
0 Switching On/Off	12 Switching On/Off	Light via presence detector
1 Dimming brighter/darker	14 Relative dimming	Stop dimming process when brightness achieved
2 Send value	15 Brightness value	Actuating value
3 Feedback	16 Brightness status	Query current dimming value from DALI Gateway

Constant light control of light band 1 (window side)

Presence detector thePrema P KNX object name	DALI Gateway object name	Push button interface TA 2 object name	Notes
0 Switching On/Off	0 Switching On/Off	0 Switching On/Off	Light via presence detector manually via push button
1 Dimming brighter/darker	2 Relative dimming	1 Dimming brighter/darker	thePrema: Stop dimming process when brightness is achieved Push button: brighter/darker
2 Send value	3 Brightness value		Actuating value brightness
3 Feedback	4 Brightness status		Query current dimming value from DALI Gateway

Constant light control of light band 2 (interior)

Presence detector thePrema KNX object name	DALI Gateway object name	Push button interface TA 2 object name	Notes
11 Switching On/Off	6 Switching On/Off	3 Switching On/Off	Light via presence detector manually via push button
12 Dimming brighter/darker	8 Relative dimming	4 Dimming brighter/darker	thePrema: Stop dimming process when brightness is achieved Push button: brighter/darker
13 Send value	9 Brightness value		Actuating value brightness
14 Feedback	10 Brightness status		Query current dimming value from DALI Gateway

Different values and setting options can be displayed and changed:

- On/Off
- Brighter/Darker
- Brightness set point value
- Time delay

ETS example

You can download the preconfigured project as knxproj. file at this link:

theben.de/ets02-en

Theben KNX blind controls

Position of the sun, sunlight, and blinds which always respond correctly

The sun rises in the east and sets in the west – but in between and over the year, it shows a surprisingly variable course, which takes its different effects on houses, functional buildings, and the people, who live and work inside.

For some people it is quickly too warm, others are blinded by the incident sunlight. Those who want to create constant lighting and temperature conditions, and ensure an efficient working atmosphere, find exactly the right components in the KNX building automation from Theben, which counteract the complex interplay of sun position, azimuth, and elevation: sun protection with sun position tracking.

All this is very energy efficient: Because in winter, the solar energy is used to reduce heating costs, and in summer, the cooling effort is reduced by correct shading.

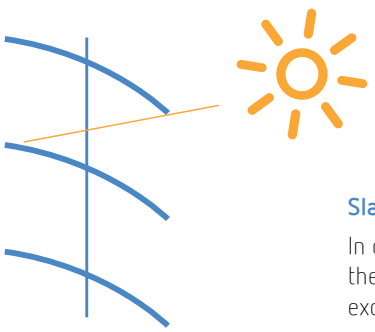
Sun position tracking for better glare protection



The temperature is 21 degrees Celsius, the wind speed is 7.5 kilometres per hour, it is very bright and there is no rain – in short: It is a beautiful sunny day. Data like these are sent by Meteodata 140 S GPS KNX to the Theben multifunction display VARIA 826 S KNX inside the individual rooms and to the MIX2 blinds actuators in the switch cabinet – and shading in accordance with the supplied GPS positioning is done.

Basically, it is all just a question of programming: What is the position of the facade in relation to the course of the sun? At which time of the day does the sun appear in the defined protection zone, and when does it leave it? And, how does it change its position in the course of the day and in the course of the year? The elevation shows the height of the sun, the azimuth shows the direction, from which the sunlight comes. The interplay of GPS weather station, multifunction display and KNX MIX2 blinds actuator reliably ensures that there are always pleasant lighting conditions on the sunny side of the facade – without dazzling. One should not forget the positive effect on climate control, since an accurate shading protects against overheating and reduces energy costs for cooling control. All this, of course with highest safety: Because during storm, ice, and frost, the blinds move up automatically.

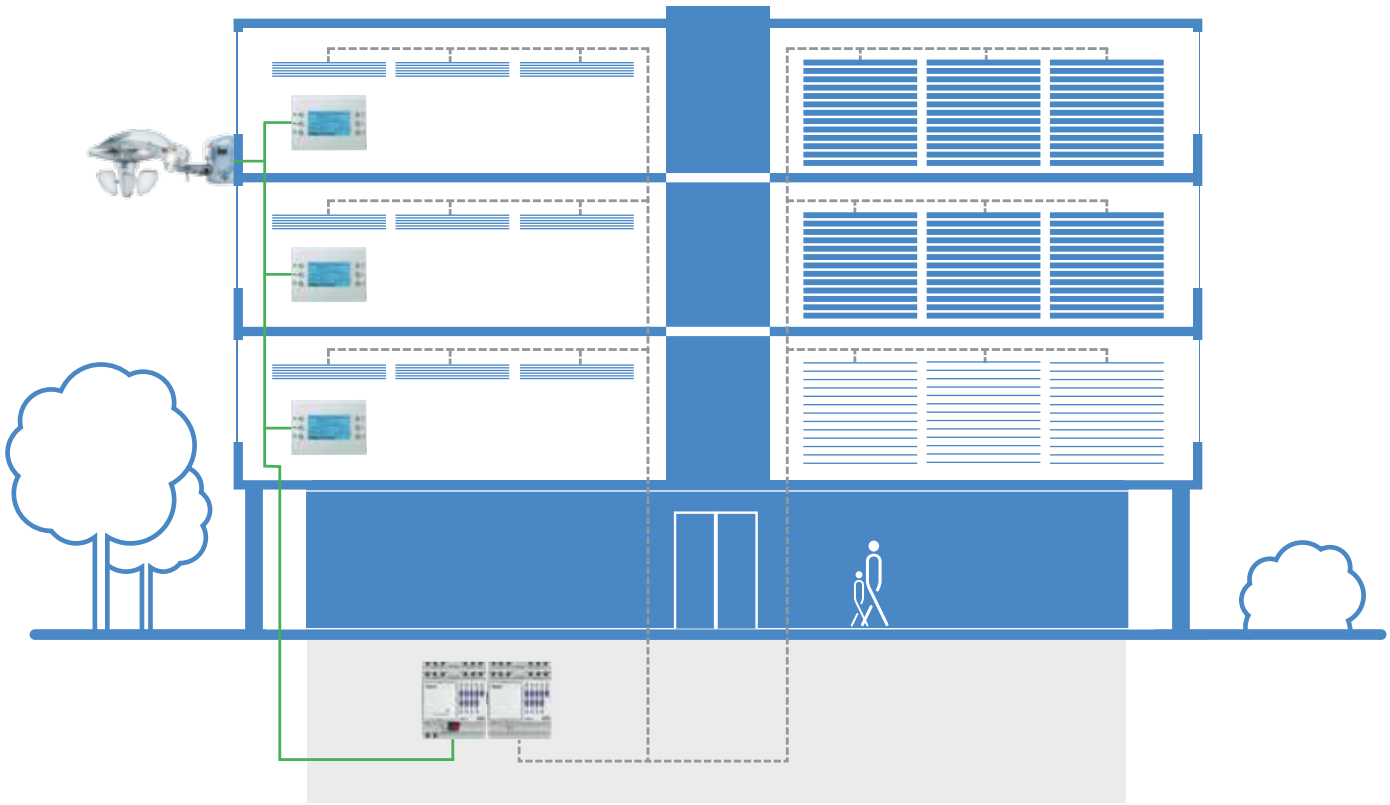
The advantage of the Theben KNX solution: In contrast to other suppliers, the measured data are processed directly inside the weather station. An additional module is not necessary.



Slat adjustment

In case of high solar radiation, the position of the slats is automatically adjusted to the course of the sun. Dazzling and directly incident sunlight is thus avoided, without excluding the daylight completely.

Theben KNX blind controls
go with the sun



Benefits at a glance

1. Less components – reduced costs

- In contrast to most other suppliers, the processing of the measured data and sun position tracking takes place directly inside the KNX weather station Meteodata 140 S GPS KNX. An additional control module is not necessary.
- The weather station protects the awnings against frost, storm or rain, and moves them into a safe position.
- Passive houses with internal blinds benefit from blinds actuator JMG 4 T 24 V: The 24 V version is ideal for this type of application.

2. Adaptable

- Through the transparent housing of the KNX Meteodata weather station, the background colour of the facade shines through, so the weather station harmoniously blends with its surroundings.

3. Energy saving comfort

- The sun position tracking ensures very pleasant and glare-free working.
- The heating and cooling support contributes to reducing the energy consumption during each season.

Weather station Meteodata 140 S GPS KNX
exactly calculates the position of the sun

The connection of combined sensor, weather station and integrated GPS receiver makes Meteodata 140 S GPS KNX a true weather expert. Azimuth and elevation are calculated automatically. Temperature, rain, wind, and brightness are exactly detected. Thanks to the three brightness sensors, the weather station is suited for sun protection control of up to eight facades. Meteodata 140 S GPS KNX is installed on the sunny side of the facade, and the area to be protected is defined symmetrically or asymmetrically in a range of up to 180°. Wherever the sun, there will be reliable shading.

Blinds actuator JMG 4 T KNX
provides optimum glare protection

This actuator positions the slats at the optimum angle. Any time of the day. The MIX2 base module controls drives of blinds, roller blinds, sun and vision protection devices, skylights and ventilation flaps. It is expandable with two extension modules to up to 12 channels. Combinations with actuators controlling lighting, heating or other functions are also possible. Perfect, when it comes to perfectly tune lighting, room temperature, and sun protection.

Multifunction display VARIA 826 S KNX
keeps you up to date on all data

The VARIA 826 S KNX displays all data coming from the weather station. Of course, the display allows direct access to the blinds – if it should be darker or if more light is desired. Independent of this specific sun protection application, the VARIA 826 S KNX, as a freely configurable multifunction display with room thermostat, is also suited for controlling heaters, blowers and air conditioners. The display is backlit, has an integrated time switch, and is available in black or white.

Project example
Sun protection and slat adjustment

Together for all JMG 4 T channels (exception: object 244)

Weather forecast receiver Meteodata 139 KNX* object name		Blinds actuator JMG 4 T KNX object name		Notes
17	Heating support	10	Heating support	Reports to the channel when heating support can be used efficiently
18	Cooling support	11	Cooling support	Reports to the channel when cooling support can be used efficiently
Weather station Meteodata 140 GPS KNX object name		**Blinds actuator JMG 4 T KNX object name**		**Notes**
60	Drives up/down	0	Up/down	Moves the blinds completely up or down on demand
61	Blinds height	2	% Height	Controls the height of the blinds
62	Slat position	3	% Slat	Controls the slat position according to the position of the sun
20	C1.1 Switching universal channel	244	Central safety 1	Central object wind alarm. Affects all channels.

Room and channel related (room 1)

Room thermostat RAMSES 712 KNX object name		Blinds actuator JMG 4 T KNX object name		Notes
2	Send actual value	12	Room temperature	Reports the current room temperature Heating or cooling support is only carried out if the room temperature requires it
Presence detector thePrema P360 KNX object name		**Blinds actuator JMG 4 T KNX object name**		**Notes**
31	Presence channel C4.1 - switching	9	Presence	Reports whether the room is currently occupied or not Heating or cooling support is only carried out in unoccupied rooms

Room and channel related (room 2)

Room thermostat RAMSES 712 KNX object name		Blinds actuator JMG 4 T KNX object name		Notes
2	Send actual value	32	Room temperature	Reports the current room temperature Heating or cooling support is only carried out if the room temperature requires it
Presence detector thePrema P360 KNX object name		**Blinds actuator JMG 4 T KNX object name**		**Notes**
31	Presence channel C4.1 - switching	29	Presence	Reports whether the room is currently occupied or not Heating or cooling support is only carried out in unoccupied rooms

Room and channel related (room 3)

Room thermostat RAMSES 712 KNX object name		Blinds actuator JMG 4 T KNX object name		Notes
2	Send actual value	52	Room temperature	Reports the current room temperature Heating or cooling support is only carried out if the room temperature requires it
Presence detector thePrema P360 KNX object name		**Blinds actuator JMG 4 T KNX object name**		**Notes**
31	Presence channel C4.1 - switching	49	Presence	Reports whether the room is currently occupied or not Heating or cooling support is only carried out in unoccupied rooms

Object names and addresses are repeated for rooms 4, 5, and 6.
On blinds actuator JMG 4 T KNX, the object number is always increased by 20.

A matter of setting

All values can be called up and set via the KNX visualisation theServa.

20	Safety wind	→	244
61	Height %	→	
62	Slats position	→	
60	Up/down	→	
17	Heating support	→	
18	Cooling support	→	
31	Presence	→	Room 1, C1 → 9
	Sun position tracking (height, slat position, up/down)	→	2
	Heating/cooling support (applies to all 6 channels/6 rooms)	→	3
		→	0
		→	10
		→	11
2	Room temperature actual value	→	12
	Room 1		
	Room 2	→	Room 2, C2
	Room 3	→	Room 3, C3
	Room 4	→	Room 4, C4
	Room 5	→	Room 5, C1
	Room 6	→	Room 6, C2

ETS example

You can download the preconfigured project as knxproj. file at this link:

theben.de/ets03-en

Air quality control from Theben
Fresh air helps students concentrate

No matter what you are doing you can concentrate properly when the air is stuffy. The right atmosphere is essential to study in. The AMUN 716 KNX air quality sensor enables just that.

The AMUN 716 KNX monitors the rooms temperature, humidity and CO_2 levels. Once it is configured it will automatically ensure the optimum air quality whilst keeping energy consumption to a minimum. That way everyone can benefit from clean air and a comfortable environment to work in.

Educationally valuable: temperature control with CO_2 measurement

A KNX installation only makes real sense if it is used for building automation across rooms. For instance, for temperature control in six classrooms. Theben's solution consists of a weather forecast receiver, a time switch, as well as heating actuators and room air sensors.

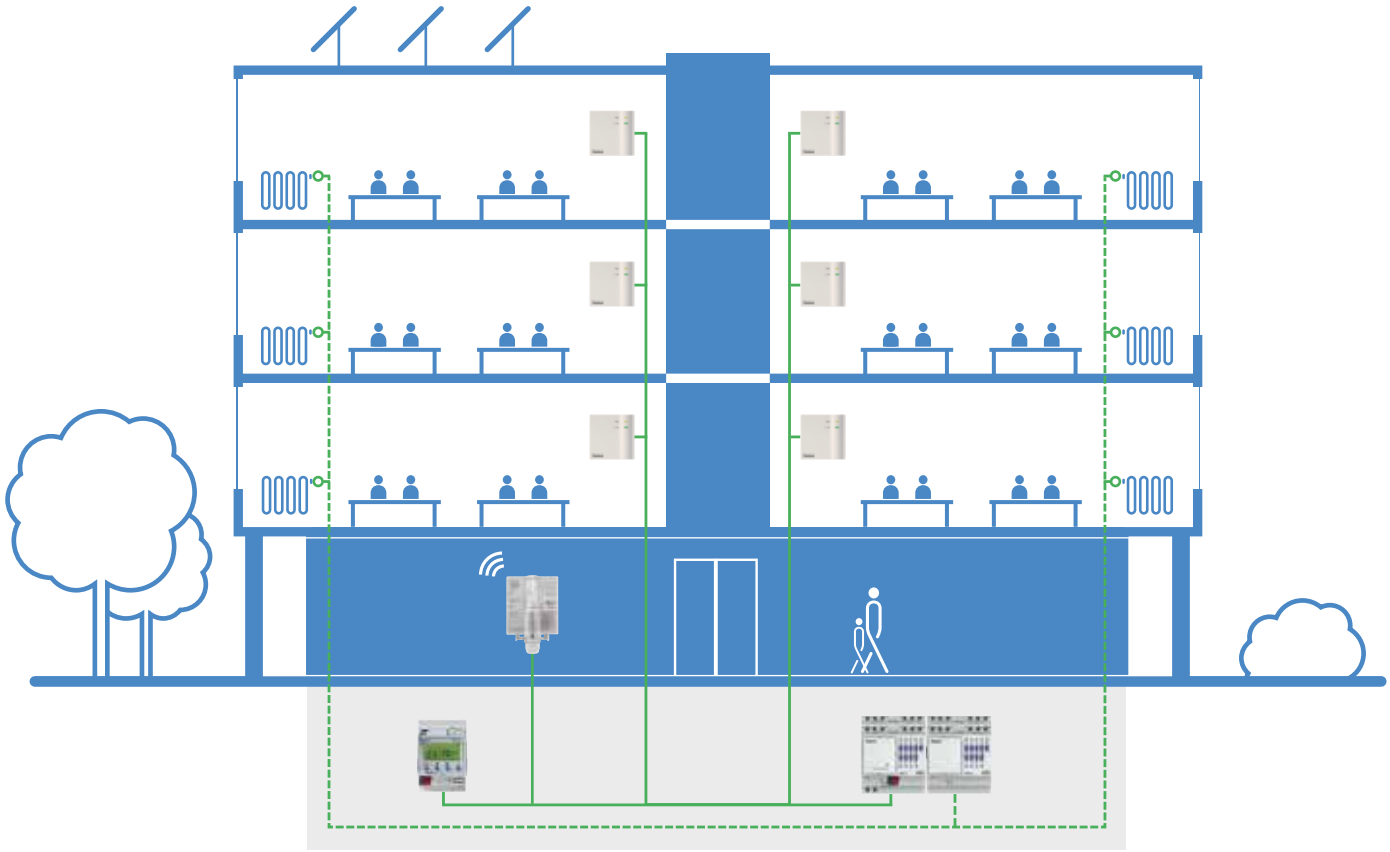
Meteodata 139 KNX* provides reliable weather forecasts for the next three days. These data are fed into the KNX bus in 6 hour blocks via telegram. In the classrooms, the CO_2 sensor AMUN 716 KNX measures the room temperature, the relative humidity, as well as the CO_2 content of the air. The heating actuator controls the heating in accordance with indoor and outdoor temperature.

Under mild weather conditions, the system changes to summer mode, and lowers the energy consumption. If a window is opened, the frost protection mode is started. Comfort mode is activated by pressing the presence button. In each situation, the students inside the classrooms enjoy constantly pleasant temperatures. Additionally, the room sensor indicates the air quality via CO_2 measurement, and when it is time to air the room again. The heating control can be controlled via multifunction display VARIA 826 S KNX, or theServa. The system can be extended to up to twelve rooms.

350	1.000	4.000	5.000	50.000	100.000	200.000
Outside air	Sense of poor air quality	Badly ventilated room	Occupational exposure limit (OEL)	Human exhalation rate	Extinction of a candle flame	Fatal danger

The AMUN 716 KNX CO_2 room air sensor also measures air humidity and temperature, apart from the CO_2 concentration in the range of 0–9999 ppm.

Theben KNX room climate control considers temperature, air quality, and energy consumption



Benefits at a glance

1. Less devices, less installation effort

- The HMG 6 T KNX heating actuator features an independent and fully-fledged room thermostat for each channel. The room temperature is transmitted by the corresponding CO_2 sensor AMUN 716 KNX from the individual rooms to the heating actuator. This reduces equipment costs, since a separate room thermostat is not needed for each room.

2. Controlling sun protection with foresight, optimising energy consumption

- By taking the weather forecast of Meteodata 139 KNX* into account, an overheating of rooms due to solar radiation can be avoided, by a foresightful use of the shades. Inversely, a solar heat gain can be achieved by moving the hangings up early in these rooms.
- Also the energy demand for domestic hot water can be optimised by using weather forecasts.

Heating actuator HMG 6 T KNX
variably controls heat and cold

This MIX2 base module has integrated heating controllers for controlling six thermal actuators. It is expandable by up to two extension modules to up to 18 channels. The control of the actuators is done via silent and wear resistant Triac semiconductor switches. Continuous or switching actuating values are selectable. Temperature control is done in accordance with the indoor and outdoor temperature, according to the comfort, night, frost or heating protection modes. If you do not only control the heating: It can be combined with all extension modules of the MIX2 series.

Weather forecast receiver Meteodata 139 KNX*
predicts what the weather will be like

The weather forecast receiver considerably contributes to minimise heating costs, to use sunshine and heat effectively, and to control the sun protection with foresight. From HKW, it receives licenced weather forecasts for the next three days via long wave. In this way, Meteodata 139 KNX* can tell whether the weather will be "fine", "cloudy", "rainy", or "stormy". Via telegram, the receiver sends the data to the corresponding KNX actuators, which – depending on the weather – control blinds, lighting, or, as in this case, the heating with foresight.

Room air sensor AMUN 716 KNX
exactly detects air quality, exactly

The CO_2 room air sensor monitors the air quality, and signals or responds appropriately to critical room conditions. It has three independent, configurable thresholds for CO_2 concentration, humidity, and for temperature. If a threshold is exceeded or fallen below, the device shows the respective state or sends a signal to the heating actuator. The AMUN 716 KNX is supplied by the bus voltage. A power supply is not necessary.

Time switch TR 648 top2 RC KNX
switches correctly, automatically

The digital time switch has GPS positioning, as well as a yearly and Astro program for automatic calculation of sunrise and sunset times over the entire course of the year. Summer/winter change over, holiday – no problem: This time switch has everything under control with its numerous yearly functions, and it synchronises itself with the other bus sharing units around the clock. So the right things happen always at exactly the right time.

Project example
Presence-dependent climate control with CO_2 sensors

CO_2 sensor AMUN 716 KNX object name		Heating actuator HMG 6 T KNX object name		Notes
2	Temperature value	2	Channel H1 - actual value	Reports the current room temperature for the control

CO_2 sensor AMUN 716 KNX object name		Switch actuator RME 8 S KNX object name		Notes
3	CO_2 threshold 1 - switching	110	EM1 RME 8 S KNX channel C4 - switch object	First fan stage
5	CO_2 threshold 2 - switching	120	EM1 RME 8 S KNX channel C5 - switch object	Second fan stage
7	CO_2 threshold 3 - switching	130	EM1 RME 8 S KNX channel C6 - switch object	Third fan stage

Presence detector thePrema P KNX object name		Switch actuator RME 8 S KNX object name		Notes
0	Lighting channel C1	80	EM1 RME 8 S KNX channel C1 - switch object	Switching light band window side
11	Lighting channel C2	90	EM1 RME 8 S KNX channel C2 - switch object	Switching light band interior of room
26	Lighting channel C3	100	EM1 RME 8 S KNX channel C3 - switch object	Switching light band blackboard lighting

Presence detector thePrema P KNX object name		Heating actuator HMG 6 T KNX object name		Notes
31	Presence channel C4.1 - switching	4	Presence	Reports whether the room is currently occupied or not

0 Light band window → 80

11 Light band interior of room → 90

26 Light band blackboard lighting → 100

31 Presence →

3 Fan stage 1 → 110

5 Fan stage 2 → 120

7 Fan stage 3 → 130

4

2 Room temperature actual value → 2

Sends various values, such as:
CO_2, temperature, humidity
for visualisation

ETS example

You can download the
preconfigured project
as knxproj. file at this link:
theben.de/ets04-en

Maximum energy efficiency
from beginning to end

We still use most of the energy for heating. Even if the share in private houses is higher than in functional or administrative buildings: In both cases, the lion's share of energy costs is consumed by heating.

Inside the individual rooms, we control the temperature with valves, room thermostats, and presence detectors. In this way, energy savings of up to 6 % can be achieved by lowering the room temperature by only one degree in unoccupied rooms. The heating system itself does not respond to changes of this kind. It provides heat, no matter if it is currently needed or not.

Theben has gone one step further. With a needs-oriented heating control from the individual room up to the boiler.

Needs-oriented and energy saving temperature control



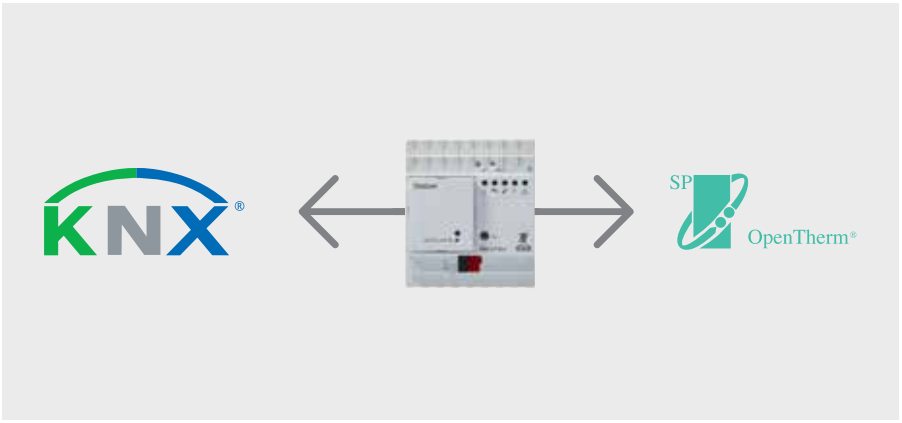
Theben now bridges the world of heating and KNX home and building automation. With the KNX-OT-Box S interface, Theben establishes the connection between both systems.
With this, consumptions can be displayed in the KNX visualisation. However, the decisive advantage is the direct access to the central heating control.

In this way, the flow temperature can be optimally set in a needs-oriented manner. By taking all rooms into consideration. Even more: The energy-optimised legionella protection prevents unnecessary heating of the storage tank to the legionella protection temperature. The effect: maximum energy savings. This is not only good for our environment, but also for your wallet.

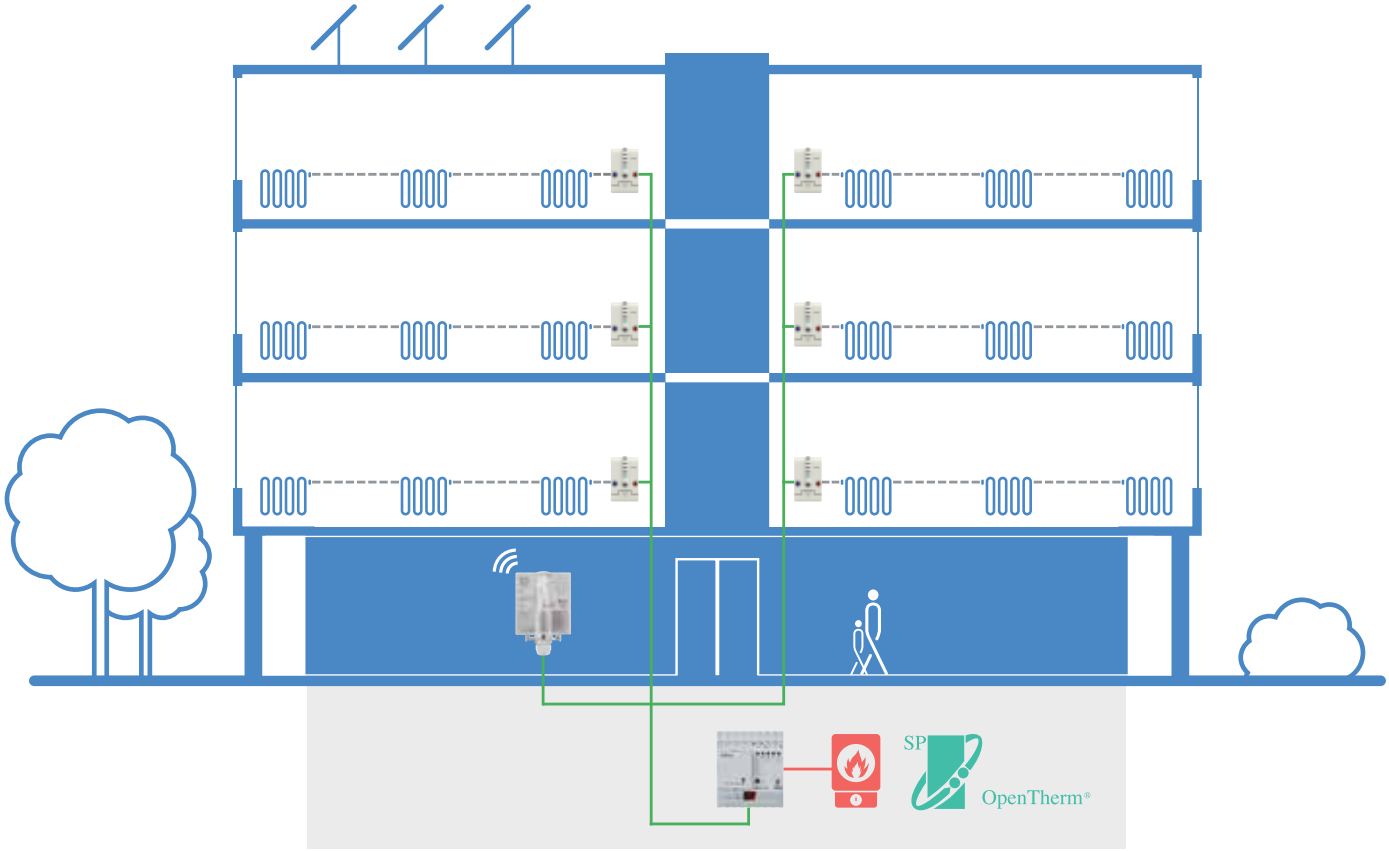
Flexible: Combined with the RAMSES 856 top2 OT heating control, even boilers without OpenTherm interface can be completely integrated into the KNX installation.

Connecting worlds

The Theben KNX-OT-Box connects the OpenTherm bus, commonly used with gas heaters, with the KNX bus. The advantage: The boiler cannot only be visualised in the KNX system, but can be completely controlled by the KNX system.



Theben KNX heating control
is open for OpenTherm



Benefits at a glance

1. Needs-oriented individual room control

- The KNX-OT-Box S not only allows pilot room control, but also needs-oriented flow optimisation by considering all rooms.

2. KNX controls boilers

- Due to the direct access from the KNX system to the OpenTherm boiler, the boiler cannot only be visualised, but its complete control can be accomplished by the KNX system. In combination with heating controller RAMSES 856 top2 OT, it even works with boilers without OpenTherm interface.

3. Energy saving domestic hot water

- Heating domestic hot water with a solar power system helps save energy, as for instance the amount of sunshine expected according to weather forecasts can be taken into account for domestic hot water. Beyond that, the energy-optimised legionella protection prevents unnecessary heating of the storage tank to the legionella protection temperature.

Weather forecast receiver Meteodata 139 KNX*
predicts what the weather will be like

The weather forecast receiver considerably contributes to minimise heating costs, to use sunshine and heat effectively, and to control the sun protection with foresight. From HKW, it receives licenced weather forecasts for the next three days via long wave. In this way, Meteodata 139 KNX* can tell whether the weather will be "fine", "cloudy", "rainy", or "stormy". Via telegram, the receiver sends the data to the corresponding KNX actuators, which – depending on the weather – control blinds, lighting, or, as in this case, the heating with foresight.

Actuator CHEOPS control KNX
allows maximum energy savings

This motorised actuator can virtually think: It controls heating valves and room temperature very precisely and stepless – easily recognisable via the LED visualisation. If the window is open, it switches off the heating. During an automatic calibration traverse, it recognises the most common valves. It only needs a bus line, but no actuator. This simplifies installation, avoids additional cables and pays off in daily use by optimum energy usage.

KNX-OT-Box S
builds a bridge to the world of heating

Two field buses, one installation – the connection in between is this little box, which enables the bidirectional exchange of data between the OT boiler and the heat distribution via the KNX system.
The KNX-OT-Box S allows needs-oriented and weather-compensated flow control, control of domestic hot water, and much more. It even provides a legionella protection program. As practical as with the MIX2 actuators: Also here, the KNX bus module can be removed, replaced and programmed, independently of the device.

KNX visualisation theServa
more convenient, faster and easier control

theServa must be experienced – either on a smartphone or a tablet. The guiding principle during its development was: "Easy to use". With a simple configuration, the user can set up floor plan and KNX installation, and store them with about 250 preprogrammed switch elements. The time switch can also be operated via a rotary knob – for all calendar functions or presence simulation. theServa provides a completely new experience of buildings.

Project example
KNX heating control for 6 rooms

Weather forecast receiver Meteodata 139 KNX* object name		Heating actuator HMG 6 T KNX object name		Notes
15	Summer mode	72	Summer mode ON/OFF	Switch to summer mode in mild weather

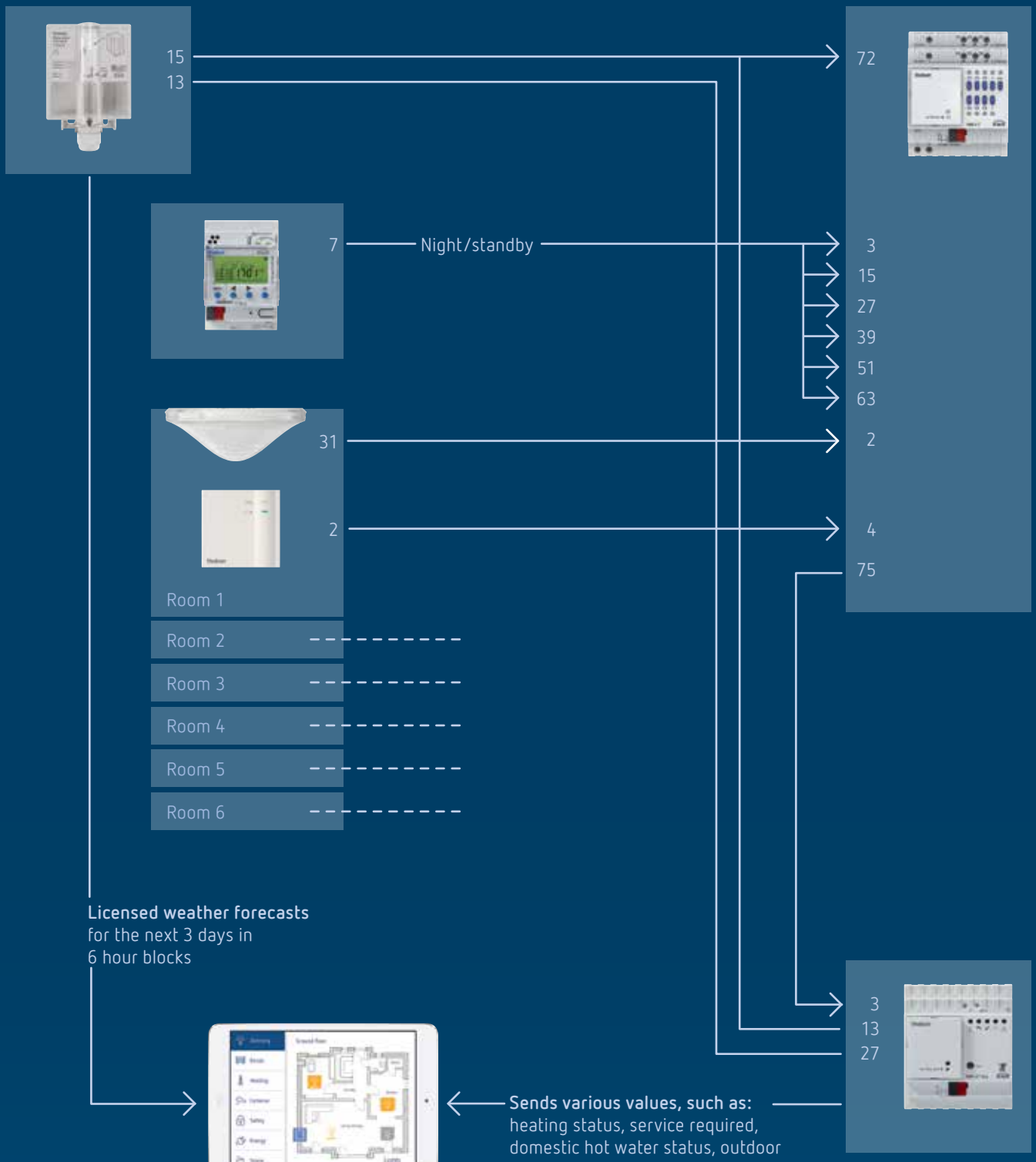
Weather forecast receiver Meteodata 139 KNX* object name		KNX-OT-Box S object name		Notes
15	Summer mode	13	Summer mode ON/OFF	Report summer mode to boiler
13	Solar yield possible	27	Expected solar support	Report solar heat for hot water processing to boiler

Digital time switch TR 648 top2 object name		KNX-OT-Box S object name		Notes
7	C1.1 Switching	3	Operating mode preset	Sets all channels to standby in the morning and lowers the temperature at night

Presence detector thePrema P KNX object name		Switch actuator RME 8 S KNX object name		Notes
31	C4.1 presence channel	4	Presence	Switches the channel to comfort if the room is occupied

CO_2 sensor AMUN 716 KNX object name		Heating actuator HMG 6 T KNX object name		Notes
2	Temperature value	2	Actual value	Current room temperature for the controller

Heating actuator HMG 6 T KNX object name		KNX-OT-Box S object name		Notes
75	Highest actuating value	3	H1 max. actuating value zone/room 1	Largest actuating value of all 6 rooms is reported to the boiler: In this way, the flow temperature is optimally adjusted to the actual requirement



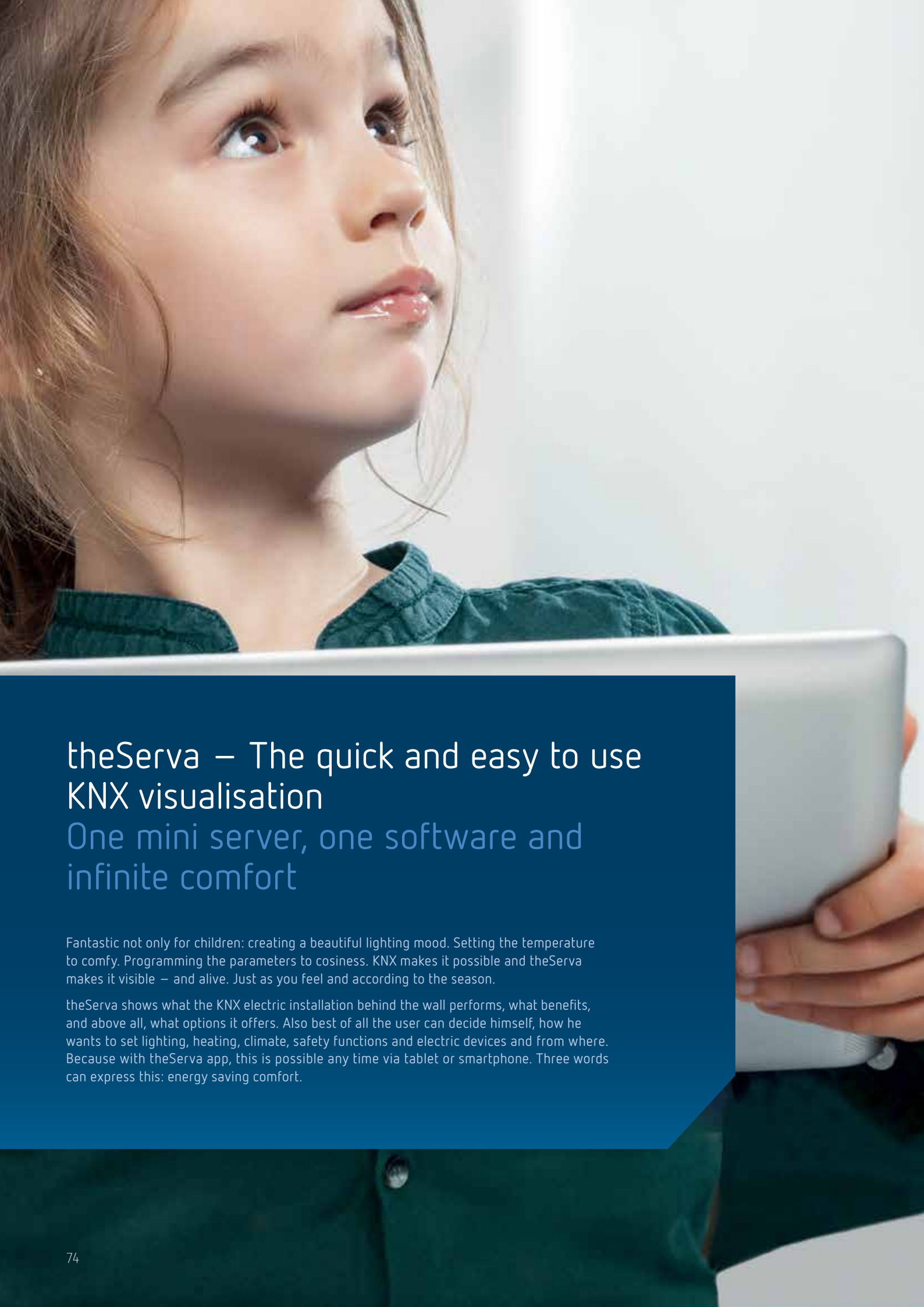
Licensed weather forecasts
for the next 3 days in
6 hour blocks

Sends various values, such as:
heating status, service required, domestic hot water status, outdoor temperature ...

NOTE
The extent of the available data may vary, depending on the manufacturer of the heating or boiler!

ETS example

You can download the preconfigured project as knxproj. file at this link:
theben.de/ets05-en



theServa – The quick and easy to use KNX visualisation

One mini server, one software and infinite comfort

Fantastic not only for children: creating a beautiful lighting mood. Setting the temperature to comfy. Programming the parameters to cosiness. KNX makes it possible and theServa makes it visible – and alive. Just as you feel and according to the season.

theServa shows what the KNX electric installation behind the wall performs, what benefits, and above all, what options it offers. Also best of all the user can decide himself, how he wants to set lighting, heating, climate, safety functions and electric devices and from where. Because with theServa app, this is possible any time via tablet or smartphone. Three words can express this: energy saving comfort.

Child's play!
KNX can be that beautiful

theServa S110 visualises the settings, shows the energy consumption and enables any desired change – for example of different lighting moods in RGB colours.

theServa is Theben's answer to the question: "Can I set this myself, or must I have an installer do it?" For system integrators who implement KNX installations, theServa opens the door to successful business – and for home owners, a new world. It just gives users a new understanding of their home.

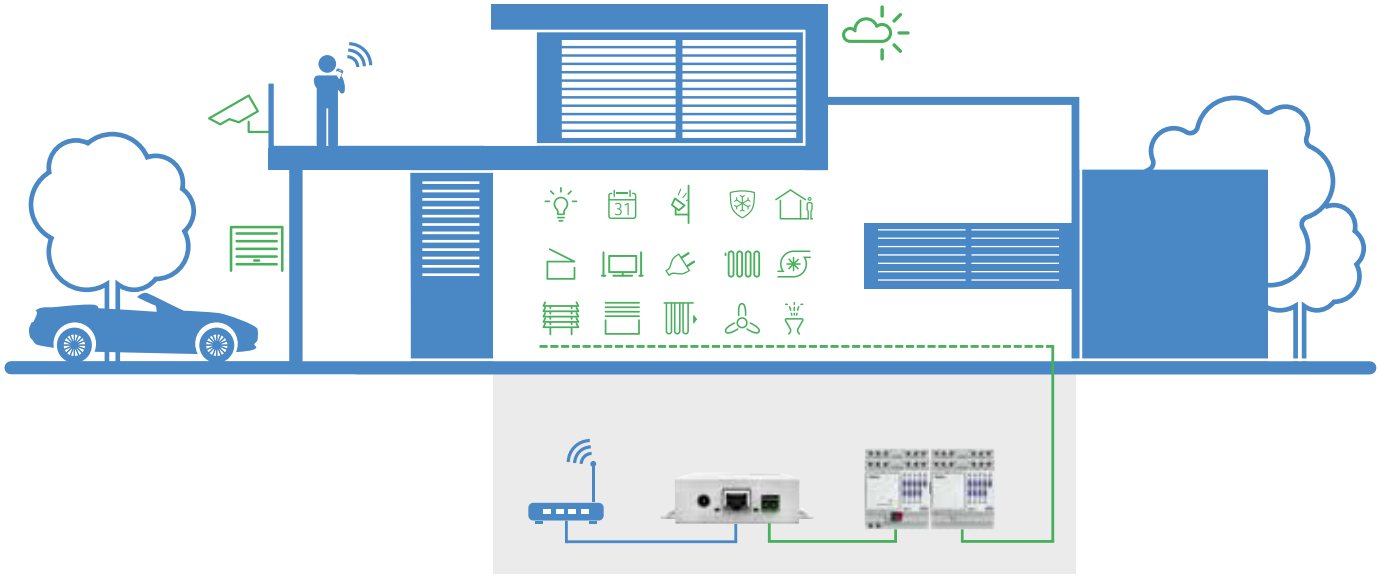
Simply because theServa can show how the energy consumption is composed. What can be saved if one reacts "correctly" to the next weather change. How you change the lighting and raise the mood with a touch on the tablet. Either during a party. Or, during a romantic candle light dinner – with lighting scenarios that candles cannot conjure.

Short: theServa offer users intuitive and extremely convenient operation – without intervening with the ETS programming done by the system integrator. theServa is a small object server with a configuration software, which allows to visualise the current data of a KNX installation and to influence them within a set framework. Only those data are called up, which are actually needed. This makes theServa so quick – and easy to operate.

Fits everywhere, provides great flexibility

The fanless mini server with KNX interface and Ethernet port fits everywhere. It combines easy operation and configuration with a large functional range.

theServa
The quick and easy to use KNX visualisation



Benefits at a glance

1. Easy-to-use
- The menu structure of theServa is very clear, and easy to operate and configure.
- The software features a comprehensive selection of predefined functions and graphical elements.

2. Very short response times
- All graphics are installed on the clients. From the clients to the server, and vice versa, only parameters, KNX group addresses and data for control are transmitted. This ensures maximum communication speed. Communication takes place via the local network or online.

3. Apps for all common operating systems
- The client software (apps) is available for the operating systems: Android, Windows, OS X and iOS.
- The number of client licenses is unlimited.

4. Energy-efficient hardware
- The mini server has a very low input power of about one watt.

Showing diagrams
clearly

With the diagram object, KNX analogue values, such as outdoor or room temperatures, wind speed, or energy consumption, can be recorded, and the measurement values can be filtered, archived, and displayed according to time criteria.

Programming thermostats
intuitively

With the display of a rotary knob, the modes of the thermostat objects can be easily selected and programmed. The selected settings can also be copied for other days.

A bar graph clearly shows all mode settings for an entire week.

Creating scenes
conveniently

By the press of a button, a scene triggers several commands, such as individual brightness values of certain lamps, combined with a specific position of the blinds. With the "Record" function, individual commands are saved on the mini server and can be directly called up via operating control, time switch, or a KNX group address. Alternatively, scenes can also be set up with Configurator, and the "Record" function can be blocked for end users.

RGB colour control for LEDs
full of atmosphere

In theServa Configurator, only the KNX group addresses (1 byte) for the three colours have to be entered.

The RGB window then automatically offers the colour mixing with colour wheel, saving of 10 favourites, and the setting of time-controlled colour sequences.

Impressive references
for intelligent KNX house and building automation

Innovative lighting design
for DIAL, Lüdenscheid in Germany

In 2012, the DIAL (Deutsches Institut für Angewandte Lichttechnik GmbH) in Lüdenscheid erected an impressive new building, which sets standards by its integral building system design. For DIAL it was clear that planning for building, building services engineering, and lighting will be down on their own. The institute especially emphasised the close interrelation of lighting planning, architecture, and lamp design. About 2000 m^2 floor space for office and conference rooms, laboratories as well as foyer, atrium, bistro, and catering zone were developed on three levels.

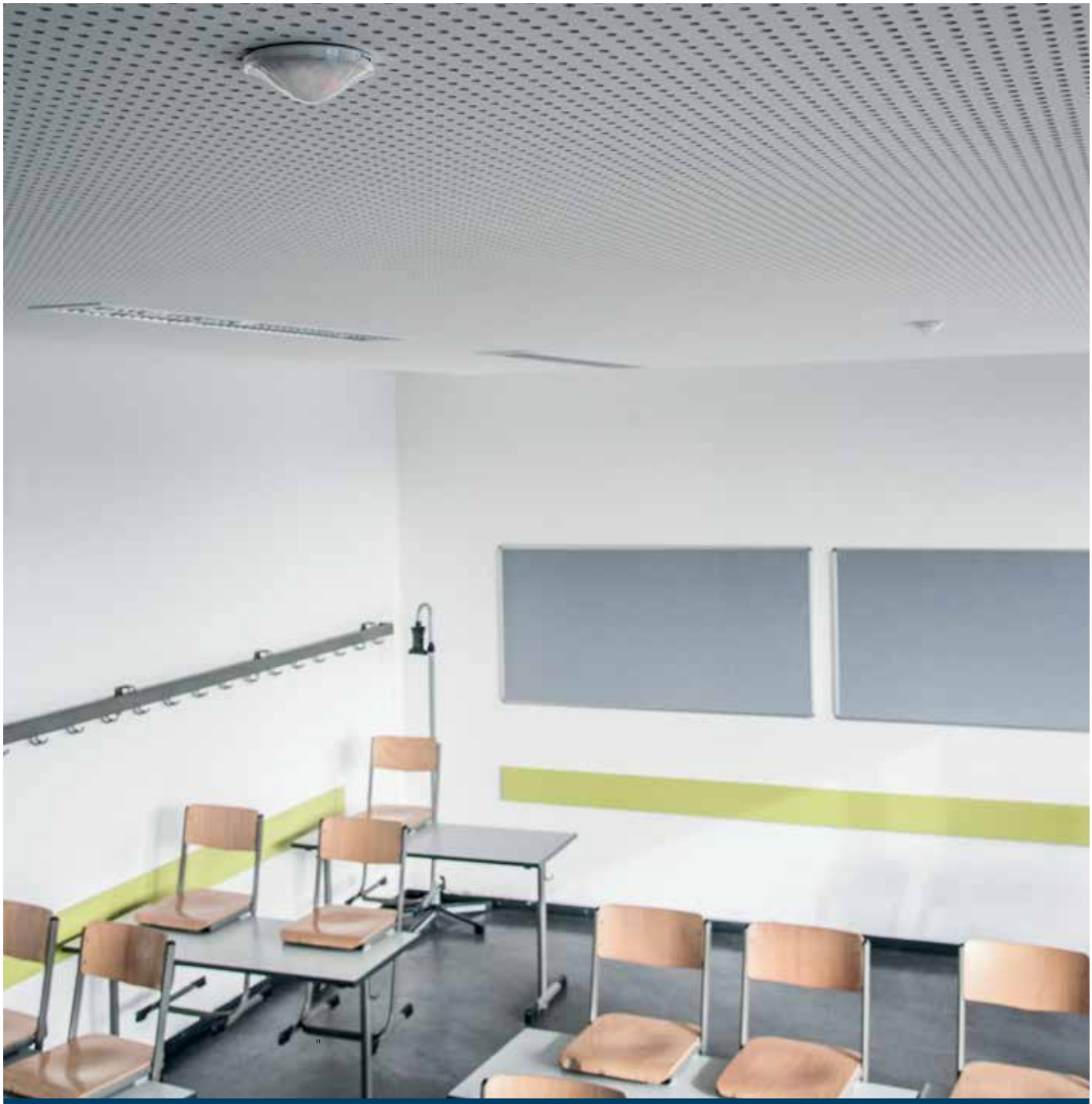
The company decided for PlanoCentro KNX. The presence detector, blending harmonically with any architecture, has been awarded the "iF Award" in 2010. In about 30 offices, the detectors control the lighting in accordance with the three different daylight sequences. A beautiful summer day is simulated. By means of its mixed light measurement, PlanoCentro KNX takes the incident daylight into account and accordingly reduces the portion of artificial light. This reduces lighting costs and CO_2 emissions. Thanks to its high detection quality, it reaches into the corners of the room, but also avoids faulty switchings. The PlanoCentro KNX thus combines an ideal illumination of the room and highest energy efficiency.

Notable building automation
for MINIHAUS Munich

First mentioned in records in 700 AD – the Bognerhof. In the middle of the Trudering district of Munich, the heritage-protected farm was exposed to decay, after the last inhabitant had left. Then, MINIHAUS Munich took over the building and had it reconstructed from the ground up. The result is an idyllic day nursery, in which everything runs smoothly – also thanks to Theben's KNX technology.

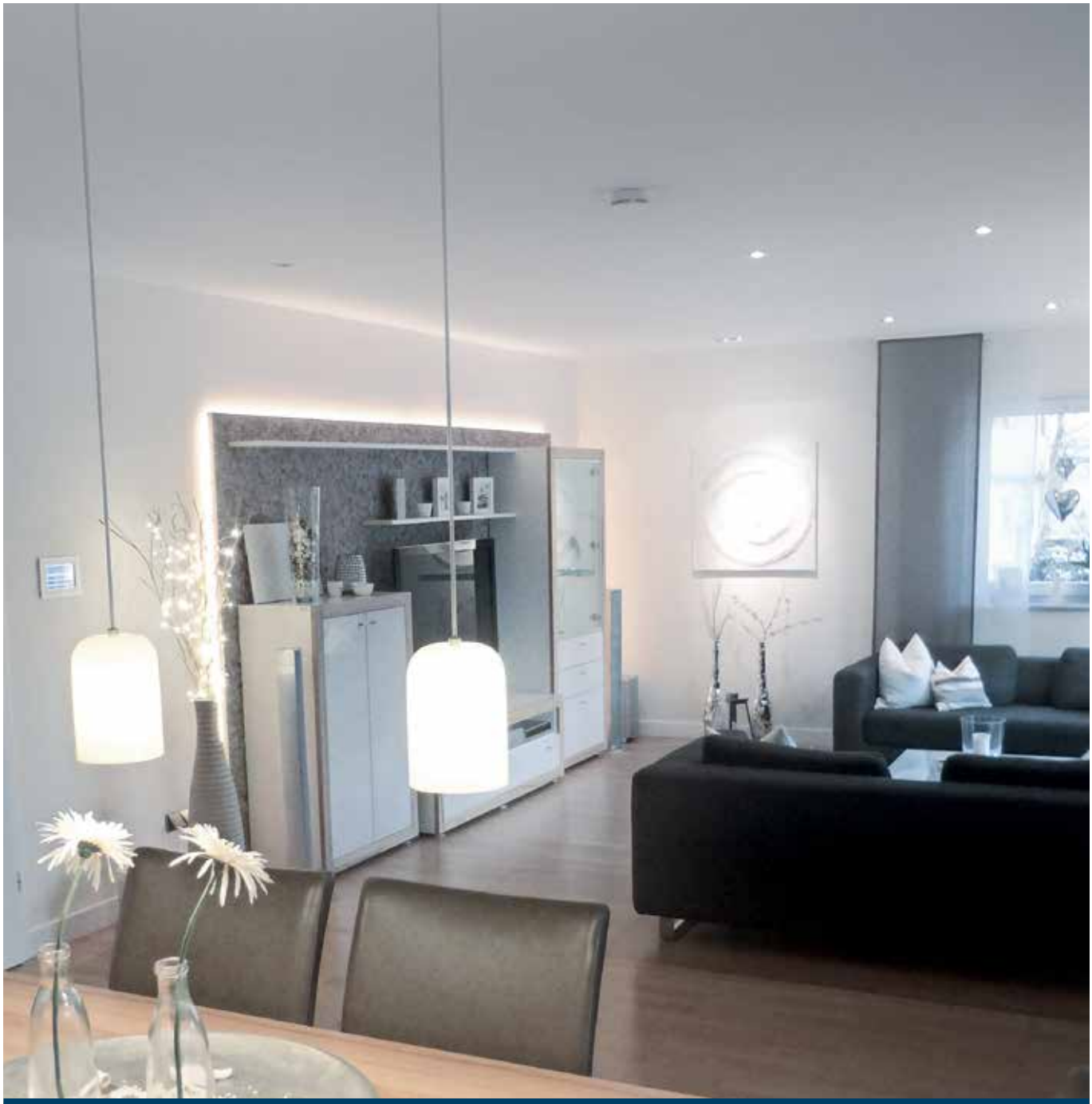
The building is equipped with a highly efficient heating and ventilation system, which is run CO_2 neutrally, with groundwater and geothermal energy. An electronic access system ensures that only authorised persons can enter the building. This intelligent building technology is controlled via all in all 116 MIX2 actuators, 2 CHEOPS drive KNX, 55 RAMSES 712 KNX individual room thermostats, 29 AMUN 716 KNX CO_2 room air sensors, 25 PlanoCentro EWH-A KNX presence detectors, and 7 DALI Gateways KNX.

The concept was so well received that MINIHAUS Munich adopts the KNX building technology from Theben 1:1 for another day nursery.



KNX becomes popular –
e.g. at the Hans-Leinberger high school, Landshut

In the course of a practical seminar, high school students automated their classroom and developed into prospective KNX specialists. They learned that automation improves comfort and reduces energy consumption. With the support of Syspa Gebäudesystemtechnik GmbH they installed and configured KNX components, also from Theben. A highlight is the measurement of CO_2 concentration and humidity with the AMUN 716 KNX room air sensor. It indicates the recommendation for venting to the class, before the "stuffy" air affects the concentration. A thePrema KNX presence detector monitors the room, switches off the light after class, and lowers the temperature. Furthermore, it detects the brightness near the windows and in the interior, by taking directed light measurements. In this way, the light band near the windows and the light band in the interior can be dimmed independently, and the blinds can be also controlled. A thePrema slave serves as an additional presence detector, in order to completely cover the room. The room temperature is also controlled automatically. A RAMSES 713 S KNX temperature sensor replaces the thermostats. Together with the electric actuators, it provides energy-efficient comfort.



theServa provides flexibility
for a single-family house in the Oberbergische Land

As the one hundredth participant, theServa increases the comfort of the already existing KNX installation of a single-family house in the Oberbergische Land. Before, the values were fixed by the ETS programming. Now the house owner can make many settings himself, via the practical mini server.

The installation uses almost all theServa functions – from monitoring with three IP cameras in the outdoor area, via various time control, sun position, and logic functions, up to IR functions for controlling the audio and video devices in living and dining room. Especially there, six scenes in combination with the states of "vision protection" and "sun protection" create the right environment for wellbeing in each situation. By touch and click via visualisation, the inhabitants control the brightness values and positions of the eleven dimmable lighting groups, of the RGB LED band, and the three roller blinds drives.

The central station is a 24 inch touch screen in the kitchen area of the house. Seven smartphones and tablets with Android und iOS operating systems are further theServa clients. Currently, the visualisation has altogether 50 screen pages.

Further references can be found at www.theben.de/en/references

KNX actuators
Technical data

MIX2 KNX switch actuator

- MIX2 4-way KNX switch actuator
- Type of contact: 16 A, 3 A NO contact
- Resistive load: 3680 W
- LED lamp:
  < 2 W: 55 W 2 – 8 W: 180 W > 8 W: 200 W
- LED switching status indicator for each channel
- Manual operation on device (even without bus voltage)
- Switch functions: e.g. On / Off, pulse, On / Off delay, staircase light with forewarning
- Logical operations: e.g. block, AND, release, OR

Operating voltage	Configuration type	Number of channels	Type	Item No.
110 – 240 V AC	MIX 2 base module	4	RMG 4 U KNX	4930223
-	Extension module MIX2	4	RME 4 U KNX	4930228

MIX2 KNX switch actuator

- MIX2 8-way KNX switch actuator
- Type of contact: 16 A, 3 A NO contact
- Resistive load: 3680 W
- LED lamp:
  < 2 W: 55 W 2 – 8 W: 180 W > 8 W: 200 W
- LED switching status indicator for each channel
- Manual operation on device (even without bus voltage)
- Switch functions: e.g. On / Off, pulse, On / Off delay, staircase light with forewarning
- Logical operations: e.g. block, AND, release, OR

Operating voltage	Configuration type	Number of channels	Type	Item No.
110 – 240 V AC	MIX 2 base module	8	RMG 8 S KNX	4930220
-	Extension module MIX2	8	RME 8 S KNX	4930225

C-load KNX switch actuators

- C-load KNX switch actuator
- With current recognition
- For higher lamp loads
- Type of contact: 16 A, 10 A NO contact
- Resistive load: 3680 W
- LED lamp:
  < 2 W: 75 W 2 – 8 W: 250 W > 8 W: 300 W
- LED switching status indicator for each channel
- Manual operation on device (even without bus voltage)
- Switch functions: e.g. On / Off, pulse, On / Off delay, staircase light with forewarning
- Logical operations: e.g. block, AND, release, OR

Operating voltage	Configuration type	Number of channels	Type	Item No.
110 – 240 V AC	MIX 2 base module	4	RMG 4 I KNX	4930210
	Extension module MIX2	4	RME 4 I KNX	4930215
	FIX2 module	8	RM 8 I KNX	4940215

KNX blinds actuators

- KNX blinds actuator
- For controlling drives for blinds, roller blinds, sun and vision protection devices, skylights, and ventilation flaps
- Manual operation on device (even without bus voltage)
- LED Up and Down switching status indicator for each channel
- Floating contacts for Up and Down per channel

Operating voltage	Configuration type	Number of channels	Type of drives	Type	Item No.
110 – 240 V AC	MIX 2 base module	4	230 V	JMG 4 T KNX	4930250
-	Extension module MIX2	4	230 V	JME 4 T KNX	4930255
110 – 240 V AC	FIX2 module	8	230 V	JM 8 T KNX	4940255
110 – 240 V AC	MIX 2 base module	4	24 V	JMG 4 T 24V KNX	4930260
-	Extension module MIX2	4	24 V	JME 4 T 24V KNX	4930265
110 – 240 V AC	FIX2 module	8	24 V	JM 8 T 24V KNX	4940265

KNX switch or blinds actuators

- KNX switch or blinds actuator
- Flexible selection of channel function as switch actuator or blinds actuator for controlling drives for blinds, sun and vision protection devices, skylights and ventilation flaps (for blinds function, two adjacent channels are combined)
- Type of contact: 16 A, 3 A NO contact
- Resistive load: 3680 W
- LED lamp:
  < 2 W = 55 W 2–8 W = 180 W > 8 W = 200 W

Operating voltage	Configuration type	Number of channels	Type	Item No.
110–240 V AC	MIX 2 base module	8 (4 with blinds)	RMG 8 T KNX	4930200
-	Extension module MIX2	8 (4 with blinds)	RME 8 T KNX	4930205
110–240 V AC	FIX2 module	16 (8 with blinds)	RM 16 T KNX	4940205

KNX universal dimmer actuators

- KNX universal dimmer actuator
- 400 W switching capacity per channel
- Dimming range 0–100 %
- For dimming incandescent lamps, low voltage and high voltage halogen lamps, dimmable LED retrofit lamps

DMB 1 T KNX

- 1 channel dimming booster
- For output extension of basic and extension modules of universal dimmer actuators by 300 W per channel. Output of up to 2000 W/VA possible via max. 4 boosters

Operating voltage	Configuration type	Number of channels	Type	Item No.
230 V AC	MIX 2 base module	2	DMG 2 T KNX	4930270
	Extension module MIX2	2	DME 2 T KNX	4930275
	FIX2 module	4	DM 4 T KNX	4940275
	Extension module dimming booster	1	DMB 1 T KNX	4930279

KNX control units 2-6 channels

- 2-way 1–10 V KNX control unit MIX
- Switching and dimming of lighting circuits in combination with electronic ballasts (EBs and LED ballasts)
- Extension module with base modules, can be combined with MIX2 series
- 1–10 V control inputs and one switch output (relay contact) per channel
- With zero cross switching for relay-saving switching

Operating voltage	Configuration type	Number of channels	Type	Item No.
230 V AC	MIX base module	2	SMG 2 S KNX	4910273
	Extension module MIX	2	SME 2 S KNX	4910274

KNX binary inputs

- KNX binary input
- LED switching status indicator for each channel
- Manual operation on device (even without bus voltage)
- Manual operation per channel for simulating the input states
- Floating universal and wide-range voltage inputs (10–240 V AC/DC or internally generated auxiliary voltage of approx. 12 V DC)
- All inputs can be operated with different voltages and at different potentials

Operating voltage	Configuration type	Number of channels	Type	Item No.
110–240 V AC	MIX 2 base module	6	BMG 6 T KNX	4930230
-	Extension module MIX2	6	BME 6 T KNX	4930235
110–240 V AC	FIX2 module	12	BM 12 T KNX	4940235

KNX binary inputs for flush-mounted boxes

- KNX binary input/binary output push button interfaces
- Can be installed in flush-mounted boxes with conventional push buttons/switches
- Free allocation of functions: switch/push button, dimming, blinds, valuator
- Inputs can be reconfigured to outputs:
  binary input: floating contact/
  binary input: 1 mA (low current) (LED 1 mA types)
- Grooves on side of housing for switch/push button clamps

Number of inputs	Type	Item No.
2	TA 2 KNX	4969202
4	TA 4 KNX	4969204
6	TA 6 KNX	4969206

KNX Presence detectors
Technical data

Presence detector PresenceLight 360 KNX

- KNX passive infrared presence detector for ceiling installation
- Square detection area
- Mixed light measurement suitable for LEDs, fluorescent lamps (FL/PL/ESL), halogen and incandescent lamps
- Adjustable sensitivity
- Light channels for control of one or two lighting groups
- Switching or constant light control with standby function
- Fully or semi-automatic operation, switchable
- Short presence; reduction of time delay in the event of short presence
- Presence channel with time delay and switch-on delay
- Protection rating IP 54

Type of installation	Detection area	Colour	Type	Item No.
Ceiling installation	49 m² (7.0 x 7.0 m)	White	PresenceLight 360B-KNX WH	2009000
		Black	PresenceLight 360B-KNX BK	2009812
		Silver	PresenceLight 360B-KNX SR	2009813

Presence detector theRonda P KNX

- KNX passive infrared presence detector for ceiling installation
- Circular detection area
- Mixed light measurement suitable for LEDs, fluorescent lamps (FL/PL/ESL), halogen and incandescent lamps
- 2 light channels and 2 presence channels
- 2 light channels C1, C2 with 1 light measurement
- 2 presence channels can be configured
- Adaptable 1 channel light measurement
- Fully or semi-automatic operation, switchable
- Switch or constant light control mode with standby function
- Lighting dimmable when in switching operation with standby function
- Restriction of detection area with cover clip
- 2 lighting channels with a joint light measurement
- 2 presence channels can be configured individually
- Fully or semi-automatic, switchable
- Switch or constant light control mode with standby function
- Lighting dimmable when in switching operation with standby function
- Brightness switching value or set point value can be set in lux by using parameters, object, or remote control
- Teach-in of the brightness switching value or the set point value
- Reduction of the time delay (short presence)

Type of installation	Detection area	Colour	Type	Item No.
Ceiling installation	452 m² (ø 24 m | 360°)	White	theRonda P360 KNX UP WH	2089000
		Grey	theRonda P360 KNX UP GR	2089001

Presence Detector thePrema KNX

- KNX passive infrared presence detector for ceiling installation
- Square detection area
- Mixed light measurement suitable for LEDs, fluorescent lamps (FL/PL/ESL), halogen and incandescent lamps
- Fully or semi-automatic operation, switchable
- Switch or constant light control mode with standby function
- Lighting dimmable when in switching operation with standby function
- Brightness switching value or set point value can be set in lux by using parameters, object, or remote control
- Teach-in of the brightness switching value or set point value
- Setting of the room correction factor for brightness measurement calibration

Type of installation	Detection area	Colour	Type	Item No.
Ceiling installation	81 m² (9.0 x 9.0 m)	White	thePrema P360 KNX UP WH	2079000
		Grey	thePrema P360 KNX UP GR	2079001
	49 m² (7.0 x 7.0 m)	White	thePrema S360 KNX UP WH	2079500
		Grey	thePrema S360 KNX UP GR	2079501

5 years guarantee[1] thePrema

[1] In accordance with guarantee conditions, see www.theben.de/en/guarantee

PlanoCentro KNX presence detector

- KNX passive infrared presence detector for ceiling installation
- Square detection area
- Flat design
- Mixed light measurement suitable for LEDs, fluorescent lamps (FL/PL/ESL), halogen and incandescent lamps
- Adjustable sensitivity
- 2 lighting channels with a joint light measurement.
- 2 presence channels.
- Self-learning time delay can be set using parameters, object or via remote control
- Switching or constant light control with standby function
- Fully or semi-automatic operation, switchable
- Short presence; reduction of time delay in the event of short presence

Type of installation	Detection area	Colour	Type	Item No.
Ceiling installation with flush-mounted socket	81 m² (9.0 x 9.0 m)	White	PlanoCentro EWH-A KNX	2059102
		Black	PlanoCentro EBK-A KNX	2059103
		Silver	PlanoCentro ESR-A KNX	2059104
Ceiling installation (flush-mounting concrete)	81 m² (9.0 x 9.0 m)	White	PlanoCentro UWH-A KNX	2059202
		Black	PlanoCentro UBK-A KNX	2059203
		Silver	PlanoCentro USR-A KNX	2059204

Presence detectors compact passage KNX, compact passimo KNX

- KNX passive infrared presence detector for ceiling installation
- Rectangular detection area
- Mixed light measurement suitable for LEDs, fluorescent lamps (FL/PL/ESL), halogen and incandescent lamps
- Two light outputs for controlling two lighting groups
- Switching or constant light control
- Choice of fully or semi-automatic operation
- Presence output for HVAC control with switch-on and time delay
- Room monitoring
- Integrated bus coupling

Type of installation	Detection area	Colour	Type	Item No.
Ceiling installation	135 m² (30.0 x 4.5 m)	White	compact passage KNX	2019290
		Black	compact passage KNX BK	2019803
		Silver	compact passage KNX SR	2019804
	68 m² (15.0 x 4.5 m)	White	compact passimo KNX WH	2019280
		Black	compact passimo KNX BK	2019809
		Silver	compact passimo KNX SR	2019810

PresenceLight 180 KNX

- KNX passive infrared presence detector for wall mounting
- Detection area 180°
- Mixed light measurement suitable for LEDs, fluorescent lamps (FL/PL/ESL), halogen and incandescent lamps
- Adjustable sensitivity
- Light channels for control of one or two lighting groups
- Switching or constant light control with standby function
- Fully or semi-automatic operation, switchable
- Short presence; reduction of time delay in the event of short presence
- Presence channel with time delay and switch-on delay, and value transmission
- Channel monitoring with manipulation protection

Type of installation	Detection area	Colour	Type	Item No.
Wall mounting	100 m² (ø 16 m | 180°)	White	PresenceLight 180B-KNX WH	2009050
		Black	PresenceLight 180B-KNX BK	2009815
		Silver	PresenceLight 180B-KNX SR	2009816

KNX motion detectors
Technical data

Indoor motion detectors SPHINX 331 S KNX, SPHINX 332 S KNX

- KNX passive infrared motion detector for ceiling installation
- Automatic lighting control based on presence and brightness
- Integrated bus coupling
- With constant light control
- Lighting control "movement-dependent only" and "movement and brightness dependent"
- Continuous constant light control / movement-dependent
- Functions: e.g. lighting ON / OFF, roller blinds / blinds UP / DOWN, time functions (switch-off delay), locking the motion detector, dimming values, dimming UP / DOWN, master / slave function
- Very flat construction (projects 4 mm from ceiling)

Type of installation	Detection area	Type	Item No.
Ceiling installation	ø 7 m	SPHINX 331 S KNX	1079215
		SPHINX 332 S KNX	1079216

Indoor motion detector theMova S KNX

- KNX passive infrared motion detector for ceiling installation
- Circular detection area
- Mixed light measurement suitable for fluorescent (FL / PL / ESL), halogen / incandescent lamps and LEDs
- One lighting channel with one light measurement
- Switching operation
- Fully or semi-automatic
- Brightness switching value can be set in lux by using parameters, the object or via remote control
- Teach-in of the brightness switching value
- Reduction of time delay when present briefly (short-term presence)
- 1 presence channel

Type of installation	Detection area	Colour	Type	Item No.
Ceiling installation	ø 7 m	White	theMova S360 KNX AP WH	1039550
		Grey	theMova S360 KNX AP GR	1039551
Ceiling installation	ø 7 m	White	theMova S360 KNX DE WH	1039560
		Grey	theMova S360 KNX DE GR	1039561

Indoor motion detector theMova P KNX

- KNX passive infrared motion detector for ceiling installation
- Circular detection area
- Restriction of detection area with cover clips
- Mixed light measurement suitable for fluorescent (FL / PL / ESL), halogen / incandescent lamps and LEDs
- One lighting channel with one light measurement
- Switching operation
- Fully or semi-automatic
- Brightness switching value can be set in lux by using parameters, the object or via remote control
- Teach-in of the brightness switching value
- Reduction of time delay when present briefly (short-term presence)
- 1 presence channel

Type of installation	Detection area	Colour	Type	Item No.
Ceiling installation	ø 24 m	White	theMova P360 KNX UP WH	1039600
		Grey	theMova P360 KNX UP GR	1039601

Outdoor motion detector theLuxa P KNX

- KNX passive infrared motion detector
- Automatic lighting control depending on presence and brightness
- Can be integrated into KNX building systems technology
- For outdoor use
- For wall and ceiling installationIntegrated temperature sensor
- For larger, commercial outdoors properties such as administration buildings, hotels, schools, underground car parks and warehouses
- Easy to program with ETS software for KNX
- Adjustable brightness switching value and time delay

Type of installation	Detection area	Colour	Type	Item No.
Wall and ceiling installation	ø 32 m	White	theLuxa P300 KNX WH	1019610
		Black	theLuxa P300 KNX BK	1019611

Brightness sensor LUNA 133 KNX

- KNX brightness sensor
- For brightness dependent controlling in outdoor areas
- Brightness range from 1 – 100,000 lux
- Ideally combinable with the Theben weather stations for individual sun protection control

Type	Item No.
LUNA 133 KNX	1339200

Brightness and temperature sensor LUNA 131 S KNX

- KNX brightness and temperature sensor
- For brightness and temperature dependent controlling in outdoor areas
- 5 freely configurable channels: 1 sun protection channel and 4 universal channels
- Sun protection channel with automated sun protection specifically for blinds, awning and roller blinds applications
- Universal channels allow linking of brightness and temperature
- Brightness range from 1 – 100,000 lux
- Temperature range – 20 °C to + 55 °C

Type	Item No.
LUNA 131 S KNX	1319201

Brightness sensor LUNA 134 KNX

- KNX twilight switch / light controller
- External light sensor included in the scope of supply
- For brightness-dependent control
- 10 channels
- 4 threshold channels for connection of external KNX sensors (e.g. temperature)
- 6 logic channels
- Up to 3 digital brightness sensors can be connected
- Simple manual operation
- 4 push-buttons for input of threshold and delay times
- DuoFix load line connections

Type	Item No.
LUNA 134 KNX	1349200

Weather station Meteodata 140 S KNX

- KNX combi sensor / weather station
- For detecting wind, rain, brightness and temperature
- For fully automatic blinds and sun protection control with automatic sun position tracking
- Rain sensor with heating
- Operation possible without voltage, in this case the heating of the rain sensor has no function
- Detection and evaluation directly in the device
- Sun protection for up to eight facades via 3 integrated brightness sensors

Configuration type	Version	Voltage	Type	Item No.
Wind, rain, brightness, temperature	Without GPS module	230 V	Meteodata 140 S KNX	1409207
	Without GPS module	24 V	Meteodata 140 S 24V KNX	1409201
	With GPS module	230 V	Meteodata 140 S GPS KNX	1409208
	With GPS module	24 V	Meteodata 140 S 24V GPS KNX	1409204
Wind, brightness, temperature	Without GPS module	-	Meteodata 140 basic KNX	1409205

Weather forecast receiver Meteodata 139 KNX*

- KNX weather forecast receiver
- Receives weather data from the HKW via longwave on temperature, hours of sunlight, probability of rain, and wind speed
- Weather forecasts for the next 3 days are displayed in 6 hour blocks
- In addition, weather scenarios such as "fine", "cloudy", "rainy", or similar, and storm warnings are received
- Data can be visualised purely for information purposes
- By using the data, heating and shades can be controlled with foresight, e.g.: exact time entry in the KNX system by a time signal, which is sent with the weather data

Type	Item No.
Meteodata 139 KNX*	1399200

*This service is not available in all European countries. Find out more at www.efr.de/en

KNX heating control
Technical data

Room thermostat RAMSES 712 KNX

- KNX individual room thermostat
- For controlling heating actuators or motorised actuators
- Can be used as a continuous or two point control (can also be combined)
- Temperature sensor can be connected to limit the floor temperature
- Object for presence or comfort, standby, temperature reduction at night, frost protection operating modes
- LED (red) for heating mode
- Inputs can be reconfigured to outputs for connecting LED (LED 1 mA types)
- 2 binary inputs for conventional switches/push buttons (switch/push button, dimming, blinds, valuator, LED control)

Type	Item No.
RAMSES 712 KNX	7129200

Room thermostat RAMSES 713 S KNX

- KNX individual room thermostat
- For controlling heating actuators or motorised actuators
- Can be used as a continuous or two point control (can also be combined).
- Continuous PI control can be configured for 2 stage heating (basic and additional stage, e. g. underfloor heating and radiators) or for heating and cooling (radiators and cooling surfaces)
- Two rotary controls are included in the scope of supply: an absolute scale (mounted) and a relative scale (enclosed)
- Rotary control can be limited mechanically or via parameters

Type	Item No.
RAMSES 713 S KNX	7139201

Multifunction display VARIA 826 KNX

- KNX multifunction display with room thermostat
- Glass front in white or black
- Freely configurable for displaying and controlling functions e.g. lighting scenarios, sun protection systems
- For control and regulation of e.g. heaters, fan coils, air conditioning systems
- Illuminated display and integrated time switch
- Up to 7 different display pages
- Automatic summer/winter time adjustment with power reserve
- Controls up to 8 rooms via own temperature profiles
- Weekly timer with 8 channels with up to 3 different statuses, e.g. for light, roller blinds, fans, etc.
- 3 heating programs

Colour	Type	Item No.
Glass front in white	VARIA 826 S WH KNX	8269210
Glass front in black	VARIA 826 S BK KNX	8269211

Heating actuators KNX

- KNX heating actuator
- For controlling thermal actuators 24 V–240 V AC with 3 channels each per group (switching capacity per group 450 mA)
- With short-circuit and overload protection
- Continuous or switching actuating value selectable
- Valve protection function can be deactivated
- With the modes: comfort, standby, night, as well as frost/heating protection
- Change over to summer mode possible

Operating voltage	Configuration type	Number of channels	Type	Item No.
110–240 V AC	MIX 2 base module	6	HMG 6 T KNX	4930240
	Extension module MIX2	6	HME 6 T KNX	4930245
	FIX2 module	12	HM 12 T KNX	4940245

Heating actuators with Triacs KNX

- KNX heating actuator for controlling thermal actuators (24 V)
- Can be installed directly on a wall or a rail in the heating circuit distributor
- Mains plug on transformer for easy installation
- Screwless terminal technology
- Integrated power supply for a max. 13 thermal actuators
- Silent semiconductor switch (Triac)
- For integrating boiler control
- Continuous or switching actuating value selectable

Operating voltage	Number of channels	Type	Item No.
230 V AC	6	HMT 6 KNX	4900273
	12	HMT 12 KNX	4900274

Motor-driven actuators KNX

- Motorised KNX actuator for heater valves or for controlling heating valves
- Simple installation by clicking onto valve adapter
- Display of valve stroke
- Automatic valve stroke recognition
- 2 inputs for window contact, presence detector, remote sensor
- Can be used in heating circuit distributor
- Integrated bus coupling unit
- With summer mode and valve protection
- 2 different valve adapters included (VA 10, VA 78)

Integrated control	Type	Item No.
√	CHEOPS control KNX	7329201
–	CHEOPS drive KNX	7319200

CO_2 Room air sensor KNX

- CO_2 KNX room air sensor
- Measures CO_2 concentration, relative humidity, and temperature
- Three independent, configurable thresholds for CO_2 concentration and relative humidity
- A threshold for the temperature
- Actions can be carried out if thresholds are exceeded or fallen below (send, priority, switching, value)
- Display of achieved threshold of CO_2 concentration and relative humidity by multi-coloured LEDs
- CO_2 setting range of 500 – 2250 ppm (thresholds)
- Relative humidity of 1 % to 100 %
- "Physical value" object of 0 – 9999 ppm
- Power supply via KNX bus voltage, 230 V mains supply not required

Type	Item No.
AMUN 716 KNX	7169200

Room thermostat Fan Coil KNX

- KNX individual room thermostat Fan Coil
- For controlling Fan Coil
- Continuous PI controller for heating and cooling
- Two rotary controls are included in the scope of supply: an absolute scale (mounted) and a relative scale (enclosed)
- Rotary control can be limited mechanically or via parameters
- Manual button for OFF, Auto, fan stages 1, 2, 3 operation modes
- 3 binary inputs for conventional switches / push buttons (switching, dimming, blinds), also for external temperature sensor, window contact or presence signal
- LED (red) for heating mode, (blue) for cooling mode
- With integrated bus coupling unit

Type	Item No.
RAMSES 713 FC KNX	7139202

Fan Coil actuator KNX

- KNX Fan Coil actuator
- For controlling Fan Coil
- For 2 and 4 pipe systems
- For up to three fan stages
- For 2-way and 3-way valves
- Additional relay for electrical heater or cooler bank
- Floating input for window contacts or temperature sensor
- Floating input condensation monitoring
- Display of operation status via 9 LEDs
- Manual operation on device (fan stages, change over between heating and cooling)

Operating voltage	Type	Item No.
220 – 230 V AC	FCA 1 KNX	4920200

KNX-OT-Box S

- KNX-OT interface
- The KNX-OT-Box serves as an interface between the boiler with OT bus (bus system in heating and ventilation technology) and the KNX bus (building system technology)
- This enables the bidirectional exchange of data between the OT boiler and the heat distribution via the KNX system (individual room control)
- Device and KNX bus module can be swapped independently of each other
- Removable KNX bus module
- The following functions are available with the KNX-OT-Box S:
  - Needs-oriented flow control
  - Weather-dependent flow control
  - Control of domestic hot water

Type	Item No.
KNX-OT-Box S	8559201

KNX time switches
Technical data

Digital KNX time switches

- Digital KNX time switch with annual and Astro programme
- 8 channels
- DuoFix load line connections for 2 conductors each
- Text-based user guidance in the display
- 800 memory locations
- Interface for OBELISK top2 memory card (PC programming)
- 8 year power reserve (lithium battery)
- ON-OFF switching times
- Pulse programme
- Cycle programme

Number of channels	Time basis	Type	Item No.
8	Quartz / DCF77 / GPS	TR 648 top2 RC KNX	6489212
	Quartz / DCF77	TR 648 top2 RC-DCF KNX	6489210

KNX time signal transmitters

- KNX time transmitter for hour and date
- Can also be used with DCF77 antenna
- LED for status display DCF reception
- Integrated power supply for DCF77 antenna
- Preset time and date (CET or CEST)
- Automatic summer / winter time switchover

Type	Item No.
ZS 600 DCF KNX	6009200

KNX indoor time switches

OSIRIA 220 / 230 / 240 KNX

- KNX indoor clock, round, single-sided
- Black bar hands for hour and minute display, red second hand
- White metallic dial
- Impact resistant plastic housing
- Matted edge

OSIRIA 242 KNX

- KNX indoor clock, round, double-sided
- With wall or ceiling holder (150 mm)
- White dial
- Black bar hands for hour and minute display, red second hand

OSIRIA 251 BQ KNX

- KNX indoor clock, square, single-sided
- Limited protection against thrown balls as per DIN 18032-3, e.g. for sports halls, schools, etc.
- White metallic dial with black bar numerals
- Black bar hands for hour and minute display, red second hand
- One sided, white painted metallic housing (RAL 9016) for heavy-duty applications

OSIRIA 232 BQ KNX

- KNX indoor clock, square, single-sided, for flush-mounting (for OP rooms)
- White metallic dial with black bar numerals
- Black bar hands for hour and minute display, red second hand
- Stainless steel housing frame flush with tiles or wall V4A for wall installation (flush-mounting)
- Resistant to acids, cleaning agents and disinfectants; in the installed state protected against dust and water in acc. with protection rating IP 54 (DIN 40050)

Dial dimensions	Type of numerals	Housing material	Type	Item No.
Ø 250 mm	Arabic numerals	Plastic housing	OSIRIA 220 AR KNX	5009200
Ø 300 mm	Arabic numerals	Plastic housing	OSIRIA 230 AR KNX	5009210
	Fine-line numerals	Plastic housing	OSIRIA 230 SR KNX	5009211
Ø 400 mm	Arabic numerals	Plastic housing	OSIRIA 240 AR KNX	5009230
	Fine-line numerals	Plastic housing	OSIRIA 240 SR KNX	5009231
	Arabic numerals	White painted metallic housing	OSIRIA 242 AR KNX	5009250
	Fine-line numerals	White painted metallic housing	OSIRIA 242 SR KNX	5009251
400 x 400 mm	Bar numerals	White painted metallic housing	OSIRIA 251 BQ KNX	5009252
250 x 250 mm	Bar numerals	Stainless steel housing	OSIRIA 232 BQ KNX	5009223

DALI Gateway KNX

- The DALI Gateway KNX acts as an interface between the DALI system and the KNX bus
- The group-oriented DALI Gateway (for max. 16 groups) controls operating devices with DALI interface (e.g. EBs, LED converters, transformers etc.)
- Up to 64 DALI participants can be connected to one DALI output. Each individual DALI participant automatically receives an unsorted DALI address via the Gateway
- The allocation of the individual DALI participants in groups of lights is achieved using a separate software tool. Each group of lights can be addressed and monitored via KNX

Type	Item No.
DALI Gateway KNX	9070722

Interface USB KNX

- USB KNX interface
- For communication between PC and the KNX installation to be programmed
- USB LED and KNX LED to display data transmission
- Usable from ETS3

Type	Item No.
Interface USB KNX	9070397

Line coupler KNX

- Line coupler
- For connecting KNX lines or areas
- Galvanic separation of the lines/areas
- Bus terminals for main line and subordinate line
- Telegrams can be filtered (to reduce telegram traffic)

Type	Item No.
Line coupler S KNX	9070880

KNX power supply

- KNX power supply and monitoring of the KNX system voltage
- Reset button for 20 sec. bus reset
- Continuous short-circuit proof

KNX nominal current	Type	Item No.
160 mA	Power supply 160 mA S KNX	9070922
320 mA	Power supply 320 mA S KNX	9070923
640 mA	Power supply 640 mA S KNX	9070924

KNX visualisation

- KNX visualisation for controlling lighting, sun protection, and heating systems via smartphone or tablet
- Complete solution with server, configuration software and app (iOS, Android)
- Graphical display of current energy consumptions
- Automatic shutdown of consumers when thresholds are exceeded
- Convenient colour mixing of RGB LEDs using a colour wheel
- Individual program thanks to logic, scene and sequence modules
- Current weather data and forecasts via weather stations

Type	Item No.
theServa S110	8254100

Theben is member of:

KNX

DALI

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9900659 2515 Subject to technical changes and improvements.