



INDIVIDUAL ROOM CONTROL

Efficient heating with KNX

Bastian Elsner | 27.02.2025

» I am your speaker today

Bastian Elsner

- Managing Partner at
Elsner Elektronik GmbH
- Responsibility: marketing, sales,
development, production,
purchasing, logistics, service



Which of you turned down the heating control when you left the house this morning?



Is the comfort temperature subjective?

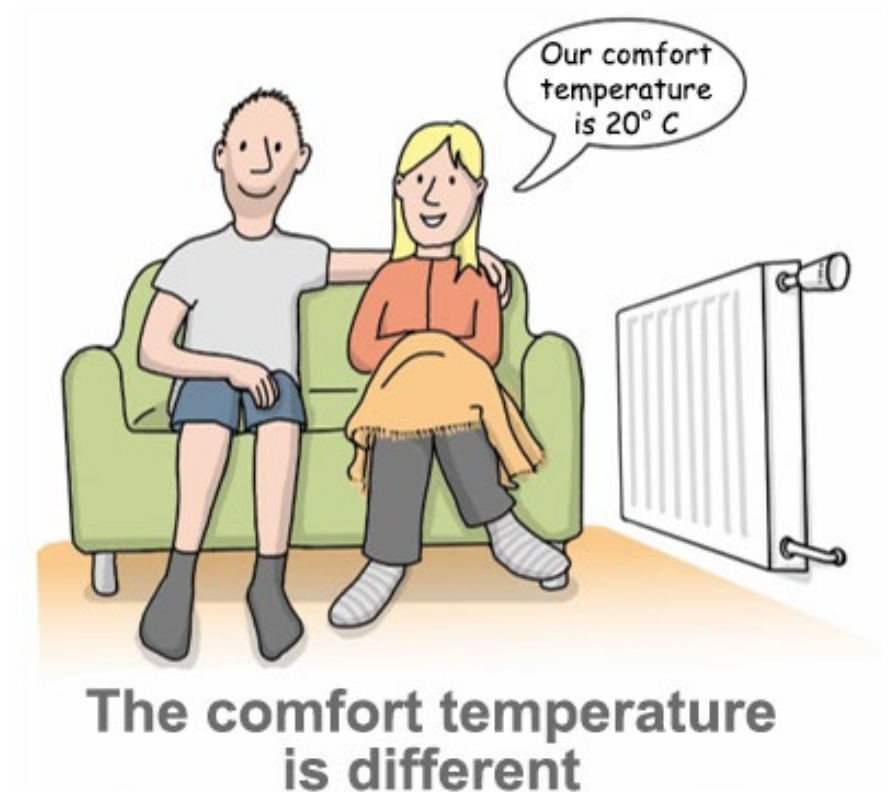
| What do you think?

People's perception of warmth varies greatly.

Nevertheless, "comfort" can also be achieved with comparatively low room temperatures.

- Avoid draughts
- Avoid temperature differences

Because most people find this unpleasant.



Learning goals

| After this webinar you will be able to:

- ✓ Determine the optimum temperature in different rooms
- ✓ Applying the principle of individual room control
- ✓ Distinguish between the different modes of operation of the control types and apply them correctly
- ✓ Selecting the right room controller for the project

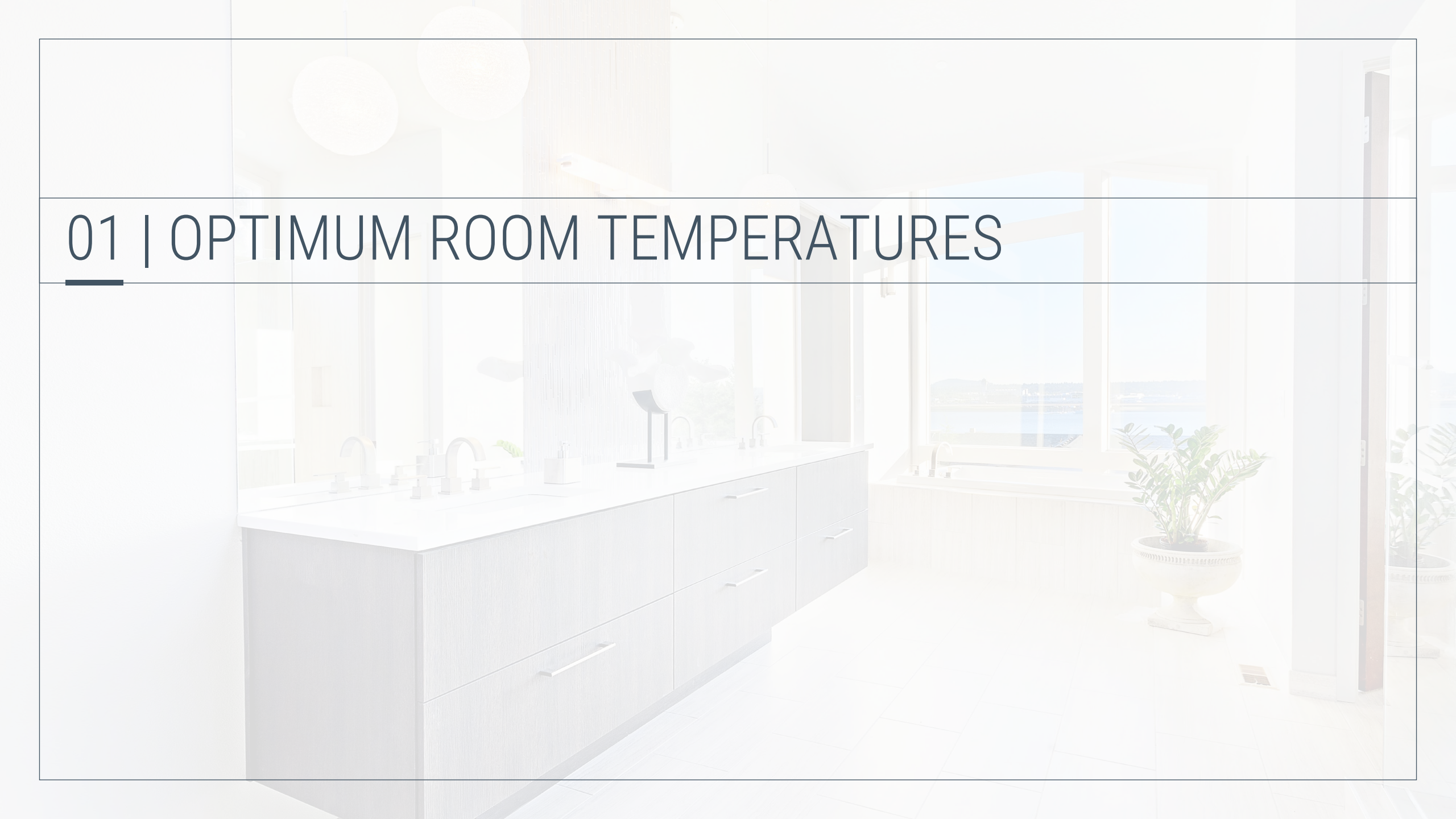


AGENDA

1. Optimum room temperatures
2. Principle of individual room control
3. Control types (2-point and continuous controller/PI control)
4. Room temperature controller with operating mode changeover
5. Two-stage heating
6. Overview of Elsner room controllers
7. Practical examples of parameterization in the ETS

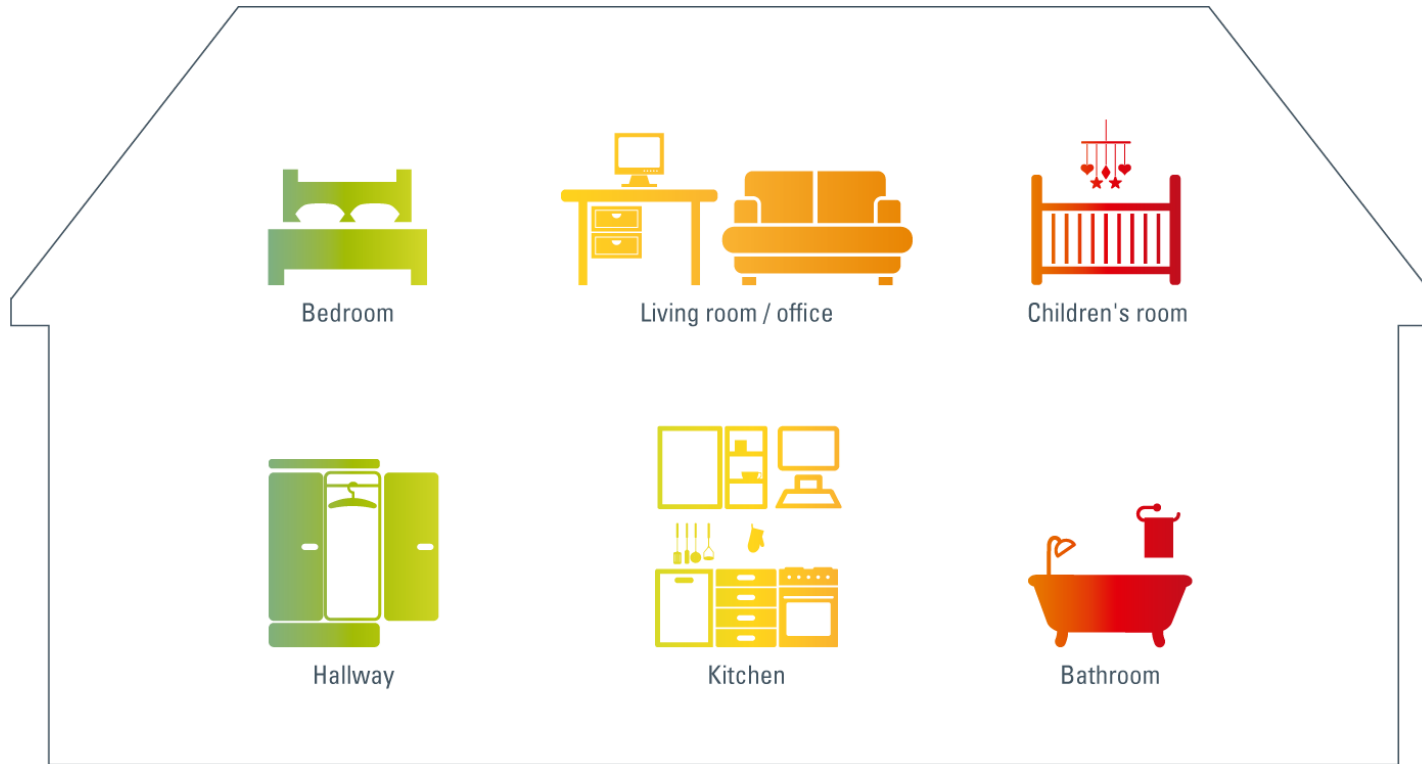


01 | OPTIMUM ROOM TEMPERATURES

A modern, bright bathroom interior. In the foreground, a long, light-colored wooden vanity with a white countertop features three sinks with chrome faucets. Below the counter are several drawers and cabinets with silver handles. To the right, a large window provides a view of a lake and distant hills. A potted plant sits on the floor near the window. The floor is covered in light-colored square tiles. The overall atmosphere is clean and airy.

Optimum room temperatures in different rooms

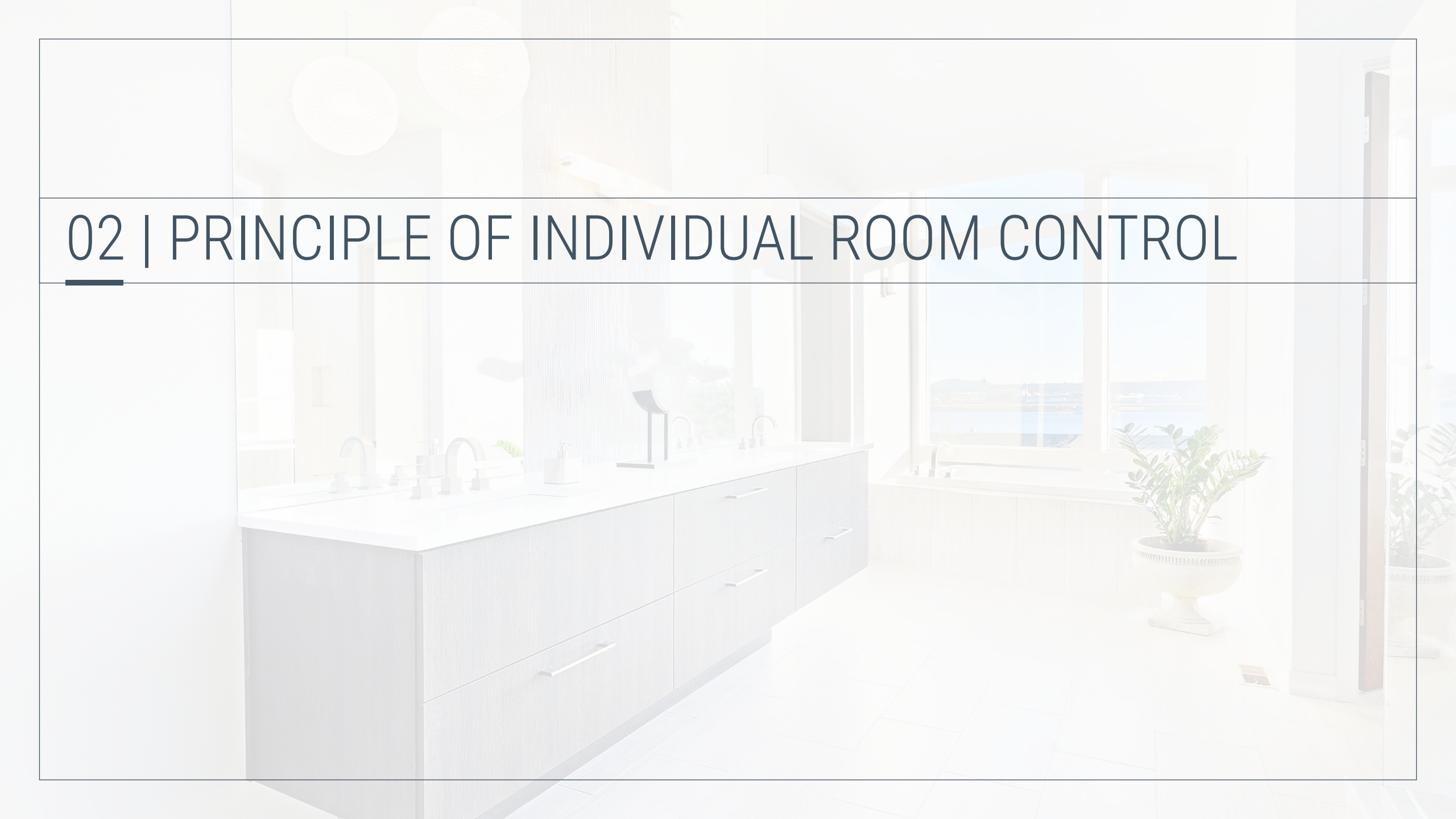
| These temperatures are considered pleasant



TEMPERATURE:

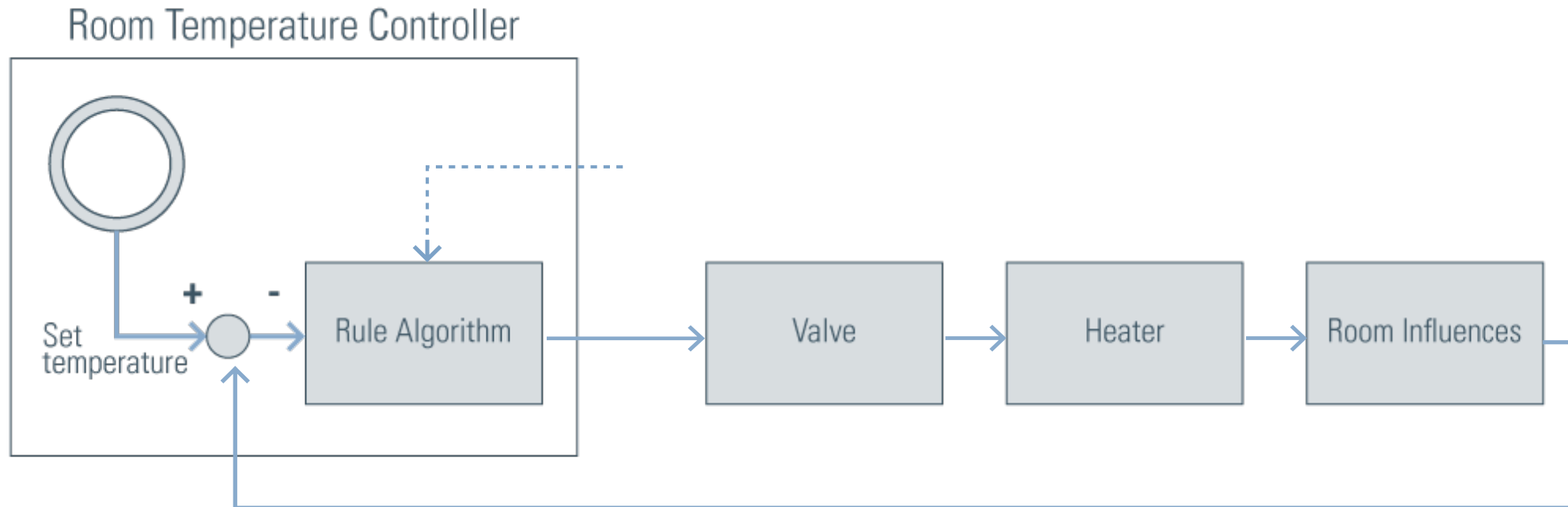


02 | PRINCIPLE OF INDIVIDUAL ROOM CONTROL

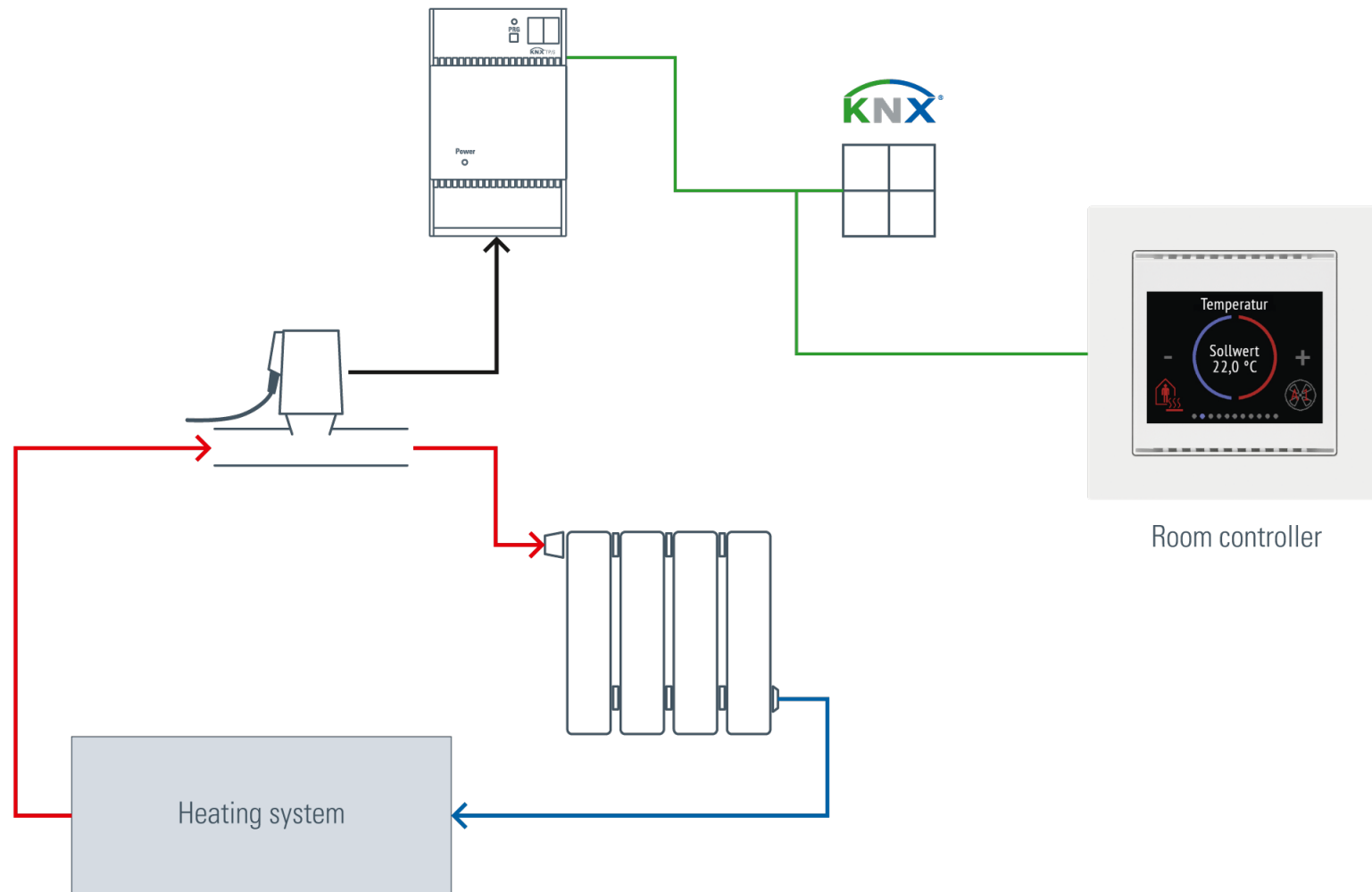
A modern bathroom with a long vanity, multiple sinks, and large windows overlooking a lake. The vanity is made of light-colored wood with a white countertop. There are four sinks with chrome faucets. A large mirror is mounted on the wall above the vanity. To the right, there is a large window with a view of a lake and a city. A potted plant is on the floor next to the window. The floor is made of light-colored tiles. The ceiling has two round pendant lights.

Schematic diagram of a room temperature controller

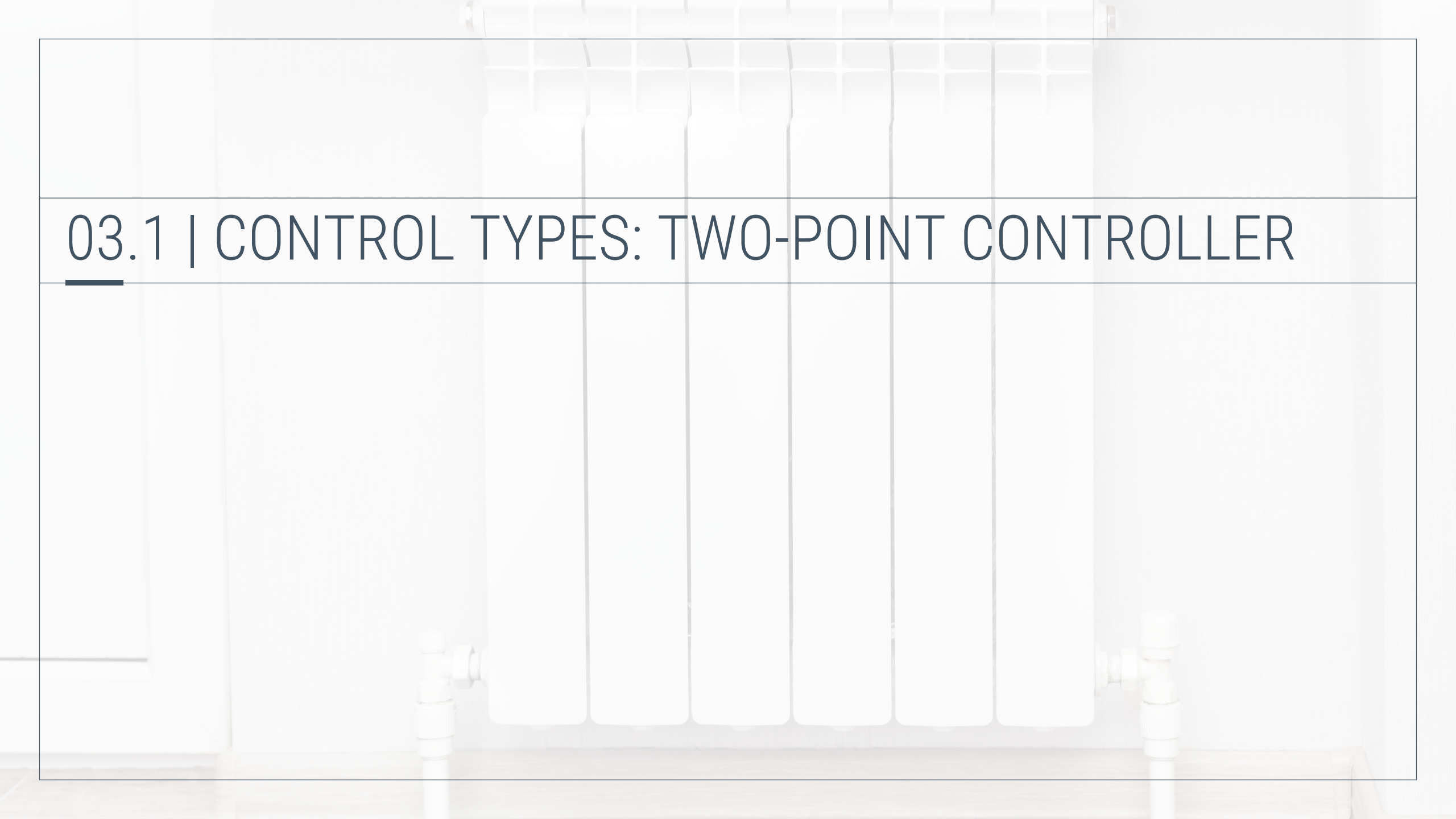
| Influence of actual temperature and setpoint temperature on the manipulated variable



Schematic representation of an individual room control



03.1 | CONTROL TYPES: TWO-POINT CONTROLLER



Functionality of a two-point controller with hysteresis

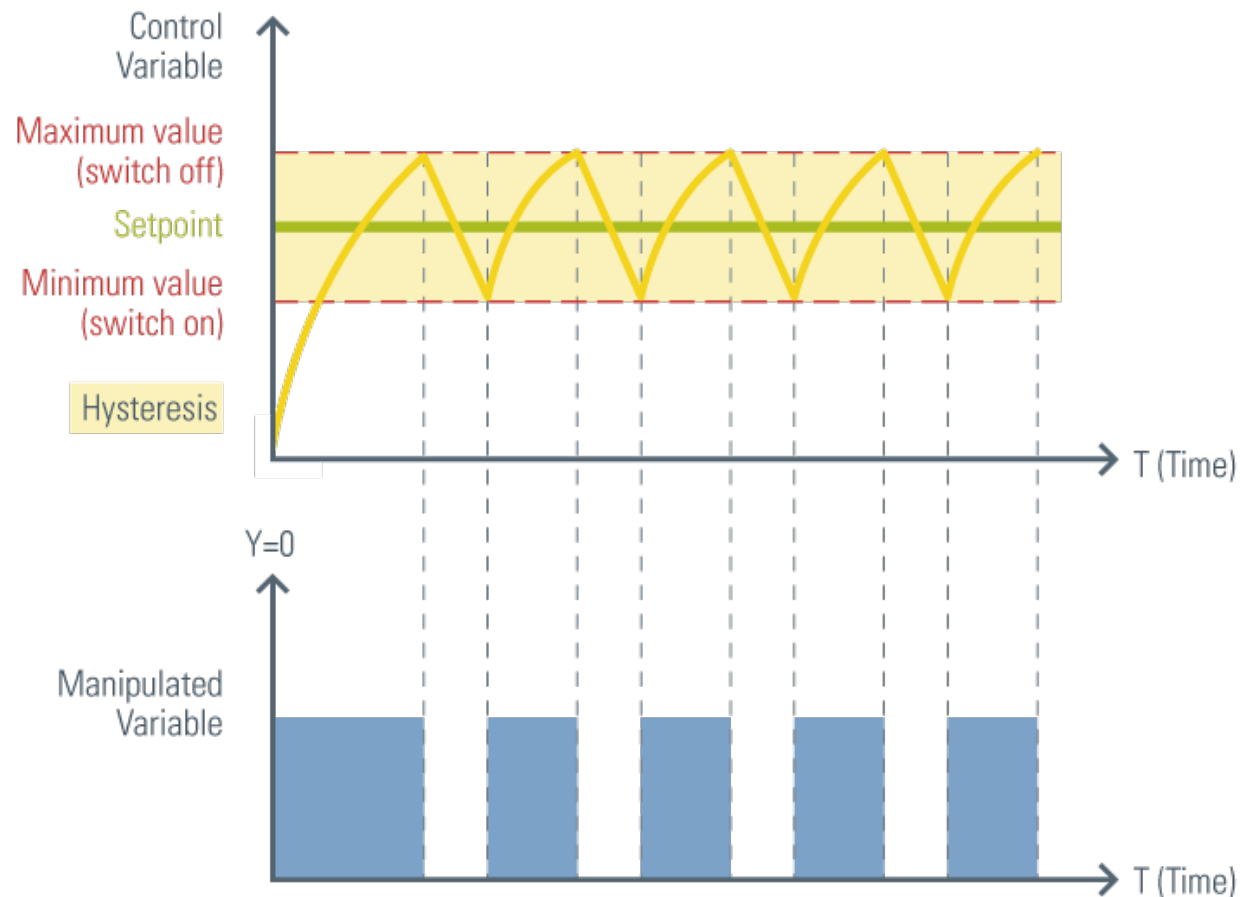


Image source: <https://www.heizungsprofi24.de/Alre-IT-Alre-Temperaturregler-Berlin-1000-mechanisch-Bi-Metall-RtBSB-201065-211211686>

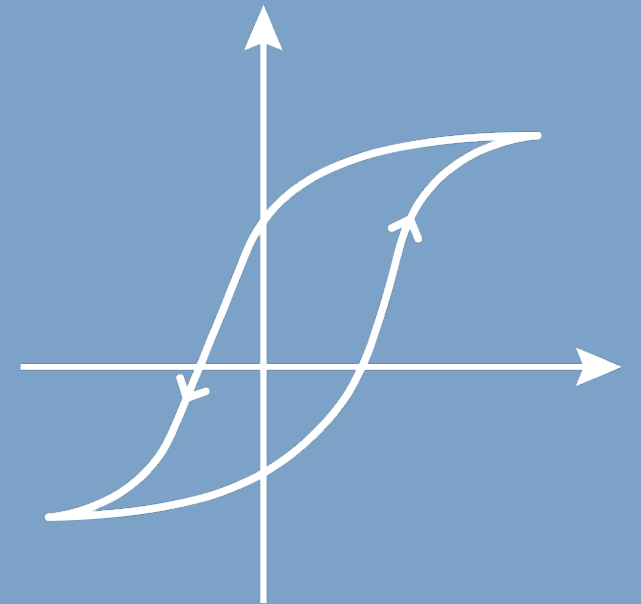
Setting the hysteresis in the two-point controller

Large hysteresis:

- Few switch-on and switch-off cycles of the heating valve (gentle)
- The control is inaccurate

Small hysteresis:

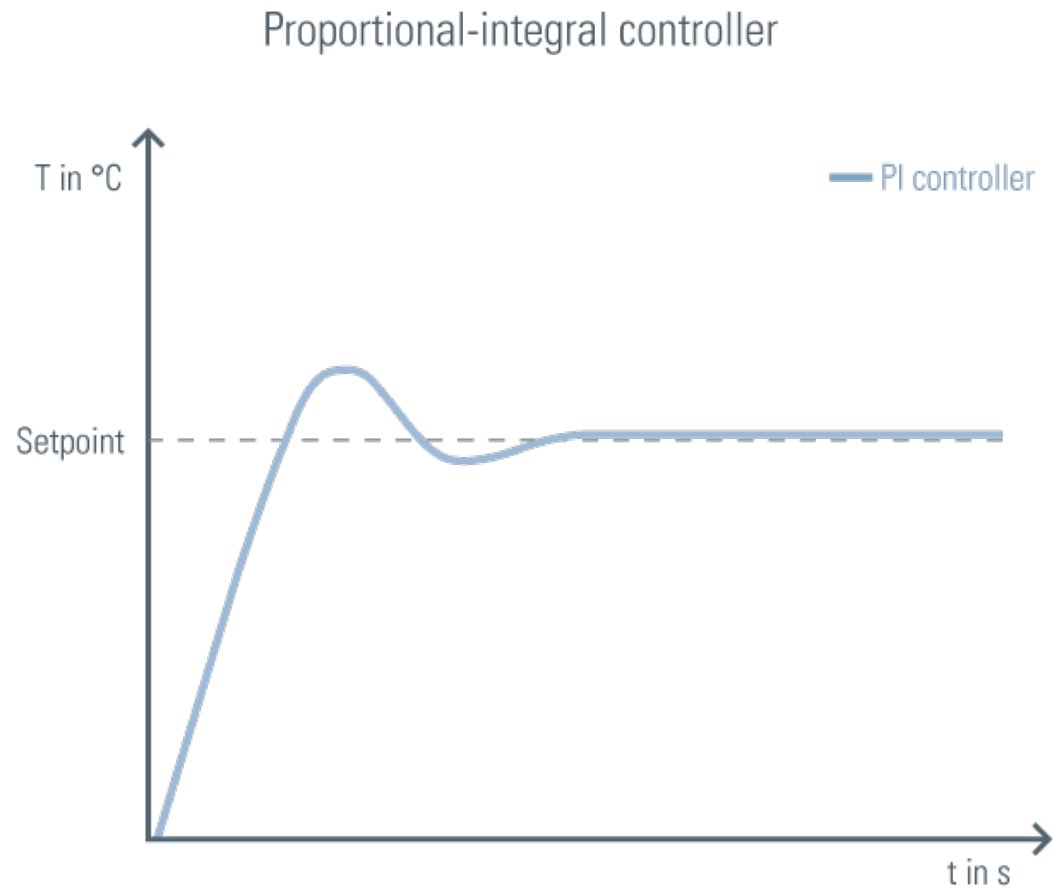
- Many switch-on/switch-off cycles, therefore not suitable for heating actuators with relays
- The control hits the desired temperature more precisely



03.2 | CONTROL TYPES: PI CONTROL

Functionality of a PI controller (continuous controller)

| Sensitive adjustment of the actuating variable to the temperature difference in the room



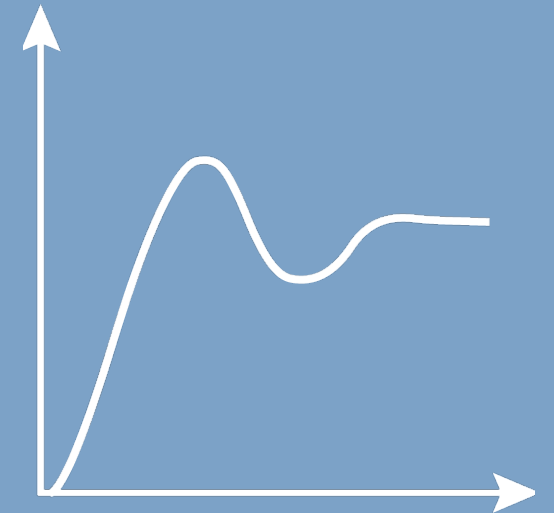
Advantages and disadvantages of the PI controller / continuous controller

Advantages

- The controller regulates continuously
- The desired set temperature is reached very precisely

Disadvantages

- Setting the control parameters is more complex
- Must be adapted to the heating system used

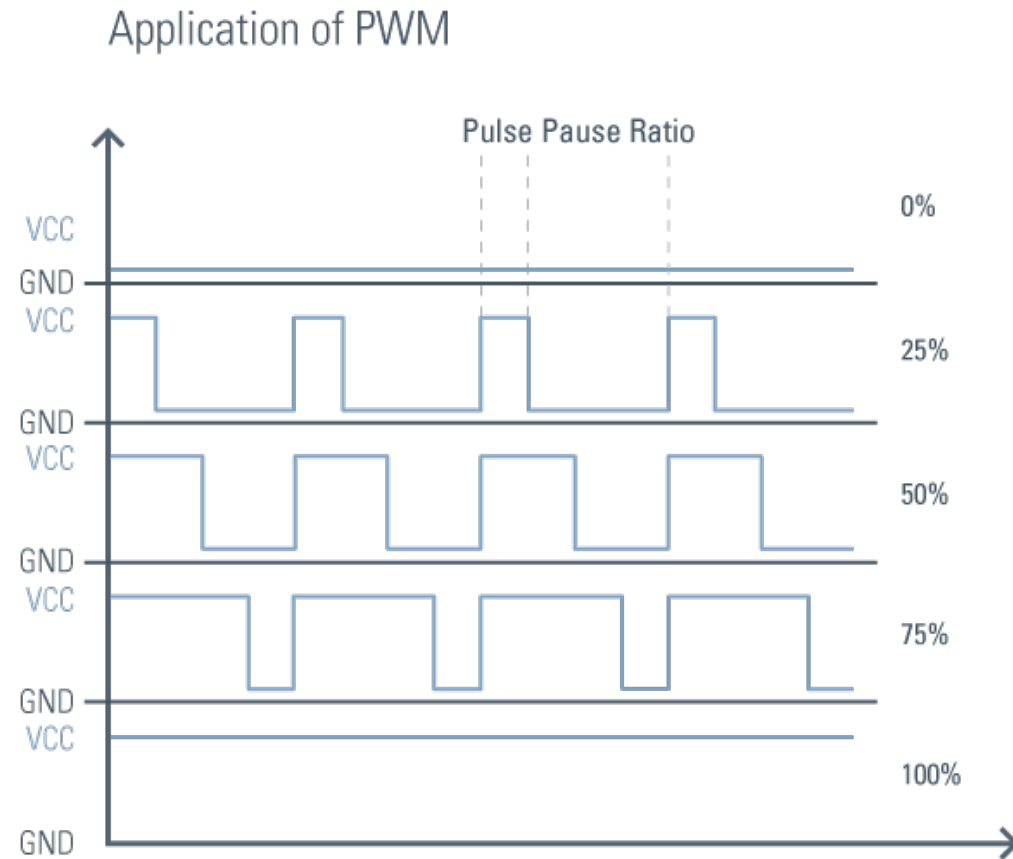


Selection of control according to heating type

| Overview

Heating system	Recommended regulation
Hot water convector heating	At low flow temperature (30-45°C): PWM/continuous controller or 2-point control. For normal flow temperature (45-70°C): PWM control.
Floor/wall heating	Very inert system, therefore PWM / continuous control with long cycle time.
Hot water fan heating	To control the water circuit: Continuous PI control. If a fan is switched together with the hot water circuit: 2-point control.
Electric heating	For convector heating: Continuous PI control. For fan heating: 2-point control.

Explanation PWM=Pulse width modulation



04 | ROOM TEMPERATURE CONTROLLER WITH OPERATING MODE CHANGEOVER



HVAC operating modes in the temperature controller

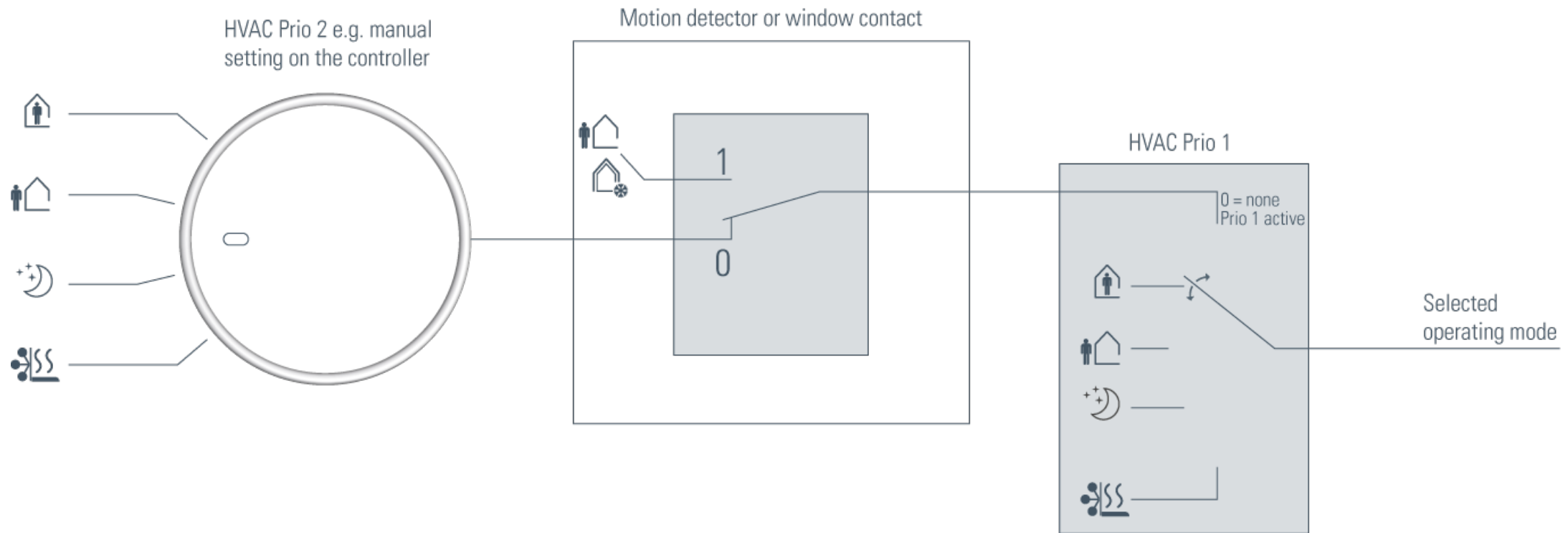
| HVAC = Heating, Ventilation, Air Conditioning, Cooling

Operating mode	Value of the KNX object	Start value before 1st communication in the controller	Start values of the setting range that can be changed via communication object
Automatic	0	-	-
Comfort	1	21°C	16–28°C
Standby (Precomfort)	2	18°C	16–20°C
Eco	3	16°C	16–28°C
Building protection	4	7°C	No range specification

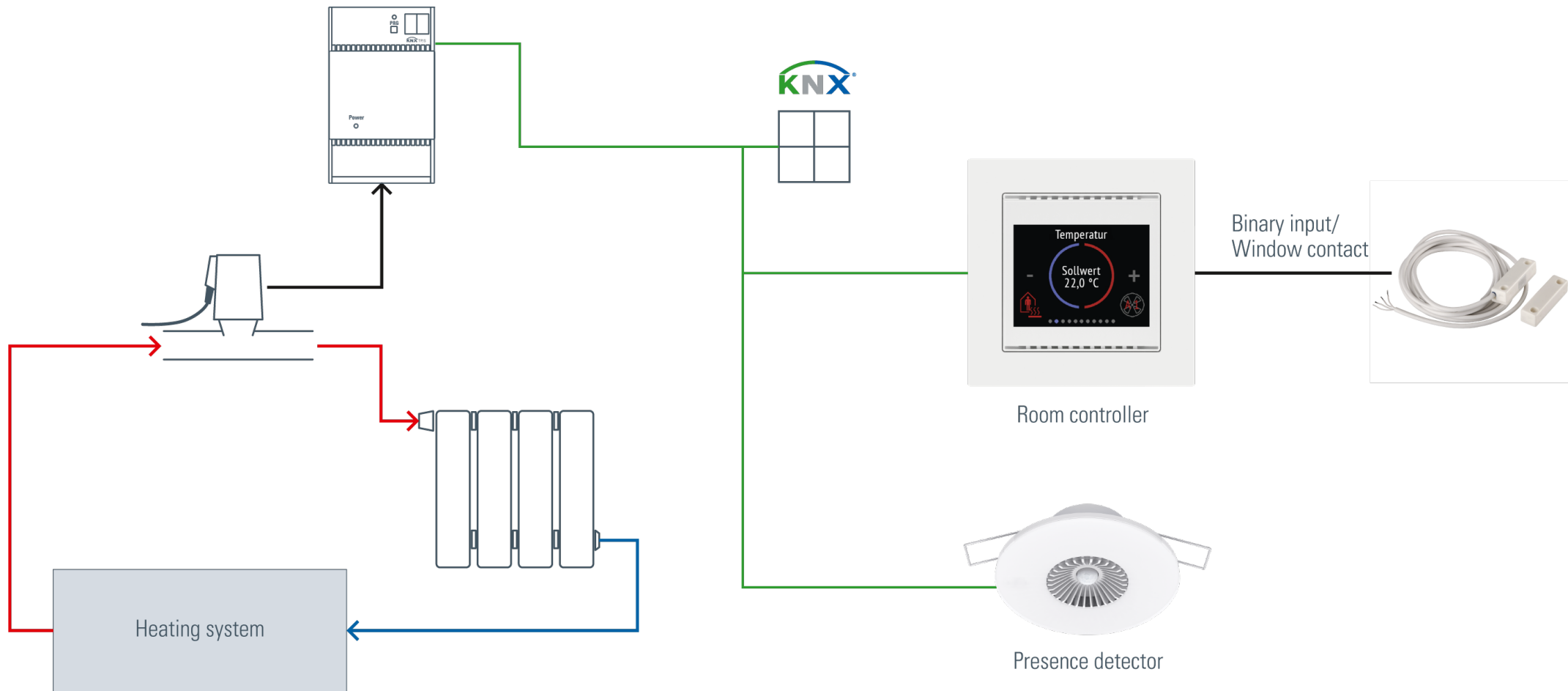
Operating mode switchover with 3x 1-bit in the temperature controller

Operating mode	Frost protection	Night-time reduction	Comfort
Comfort	0	X	1
Standby (Precomfort)	0	0	0
Eco / Night	0	1	0
Building protection	1	X	X

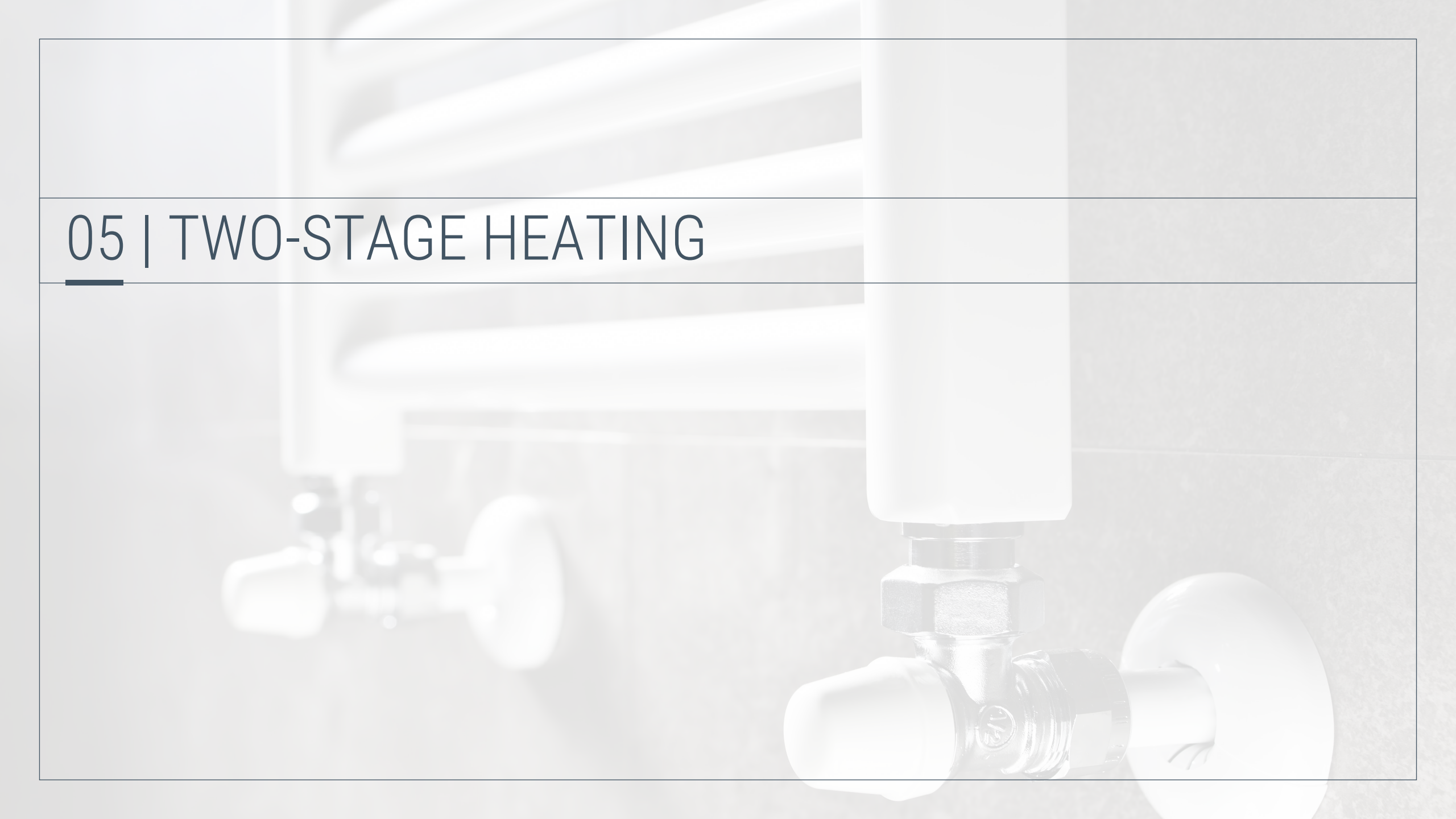
Operating mode switching: How it works



Schematic diagram of an intelligent individual room control system



05 | TWO-STAGE HEATING

A background image showing a white radiator with a valve and a white knob on a wall. The radiator is white and has a valve with a white knob. The wall is a light gray color. The image is slightly blurred, giving it a soft, artistic feel.

Two-stage heating

| Combined heating with two heating systems

- Inert heating
- Combined with an additional heater for rapid heating

Example bathroom:

The floor heating maintains the standard room temperature.

If a significantly higher temperature is required (set/actual difference e.g. 3°C), the wall heating is also activated. The desired room temperature is reached quickly.

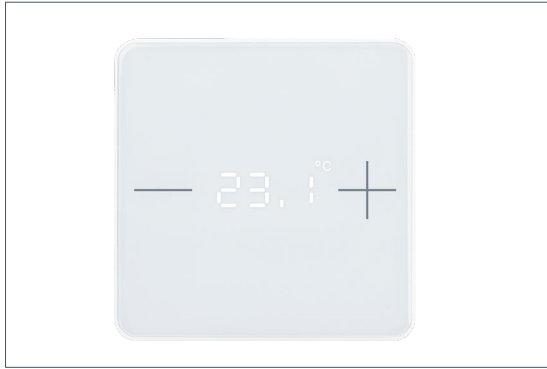


06 | OVERVIEW ELSNER ROOM CONTROLLER



KNX eTR series

| Room Controller



KNX eTR 101

- Integrated temperature measurement
- Temperature control
- Also available as version with binary input (eTR 101-BA2)



KNX eTR 208

- Integrated temperature measurement
- Temperature control
- Switch / dim light
- Sunshade / Window



KNX eTR 102 FC

- Integrated temperature measurement
- Temperature control
- Fan level control





KNX eTR 101



KNX eTR 201

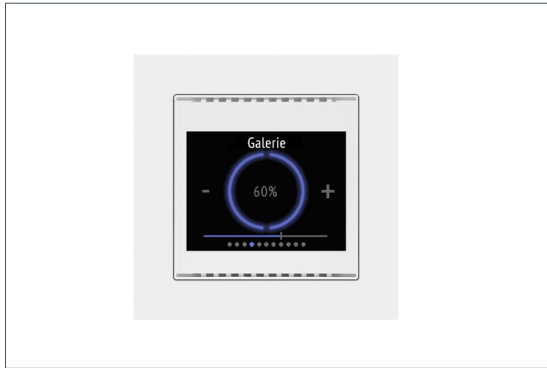


KNX eTR M1



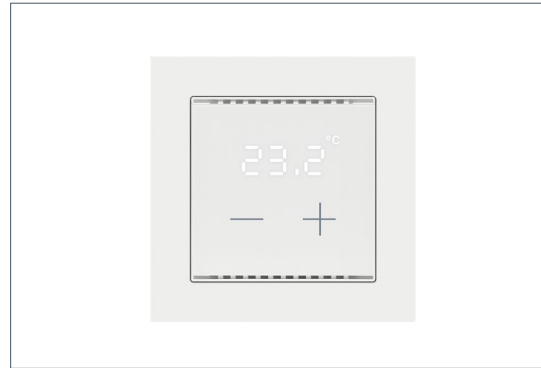
Series Cala KNX

| Room Controller



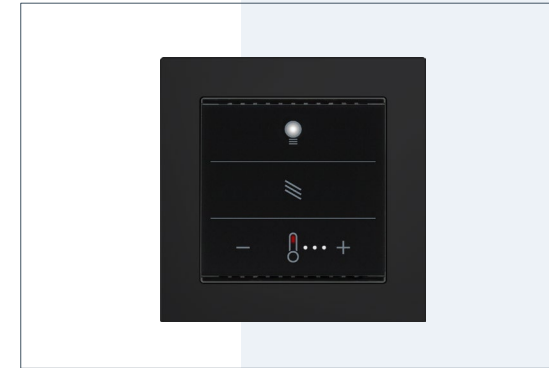
Cala KNX T (Item no. 7080x)

- Integrated temperature measurement
- Temperature control
- Switch / dim light
- Sunshade / Window
- 4 binary inputs



Cala KNX 101 (Item no. 7098x)

- Integrated temperature measurement
- Temperature control



Cala KNX MultiTouch T Light/
Sunblind (Item no. 7089x)

- Integrated temperature measurement
- Temperature control
- Switch / dim light
- Sunshade / Window

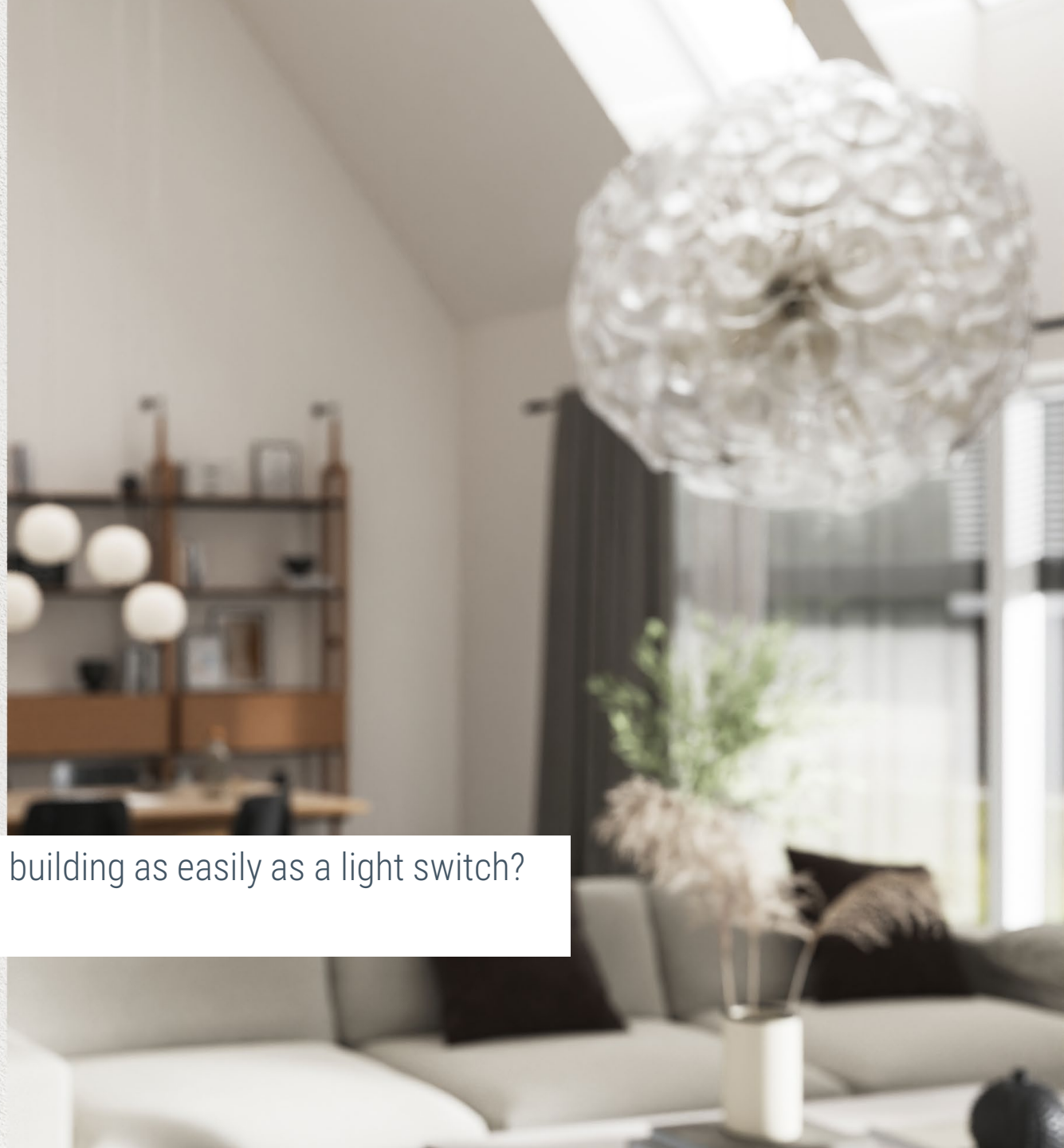




Cala Touch KNX AQS/TH



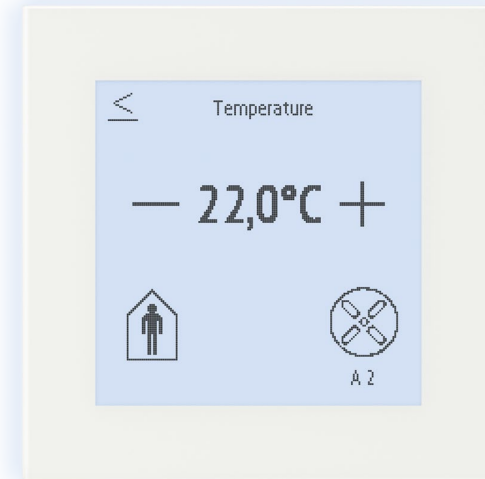
Install intelligent control units for the smart KNX building as easily as a light switch?
With the Cala KNX series, of course!



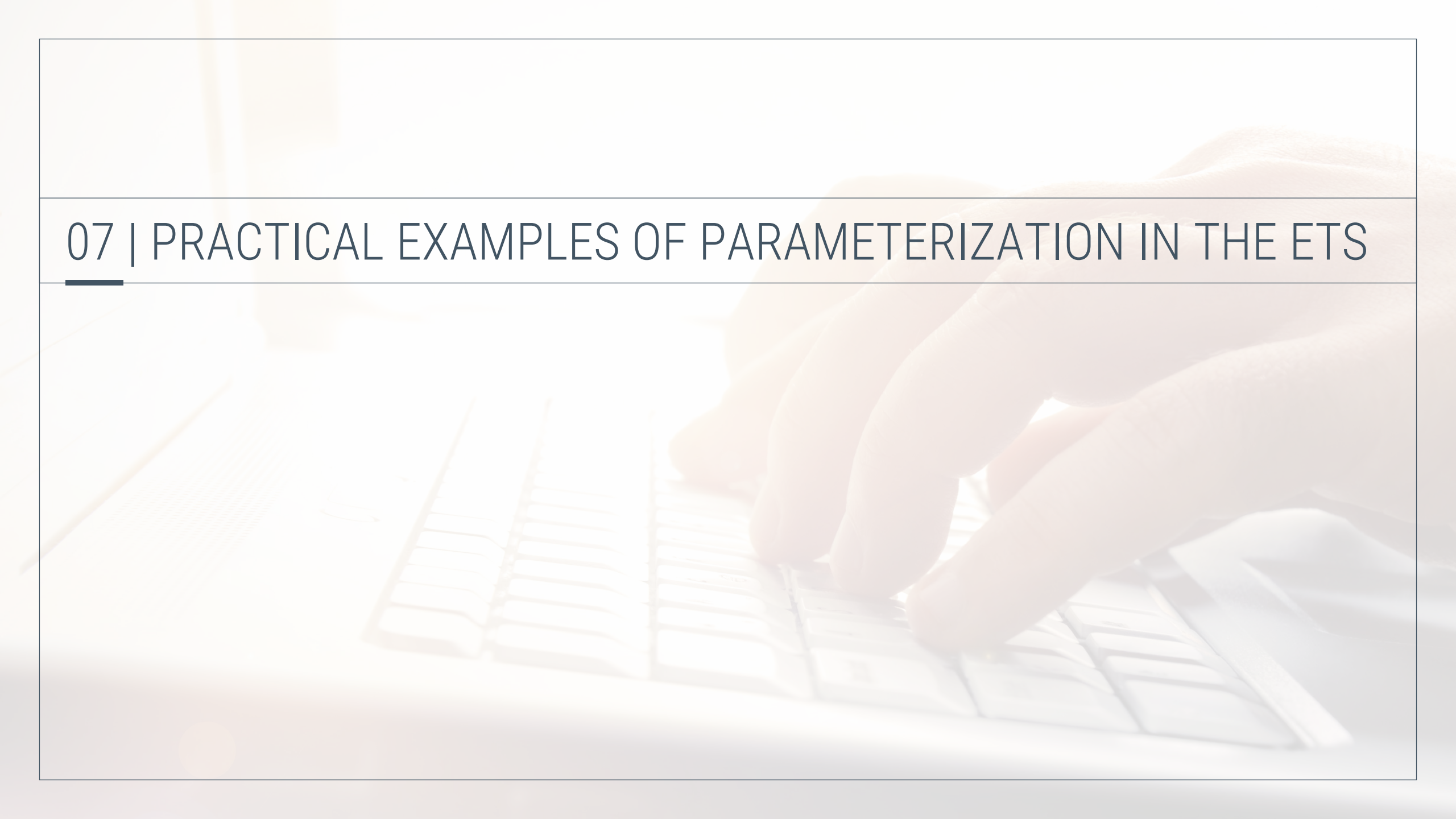
Nunio KNX

| Universal Push Button

- Integrated temperature measurement
- Temperature control
- Switch / dim light
- Sunshade / Window
- One display page as single, double, triple or quad push buttons
- One display page for temperature setpoint adjustment
- Size: 85 mm × 85 mm

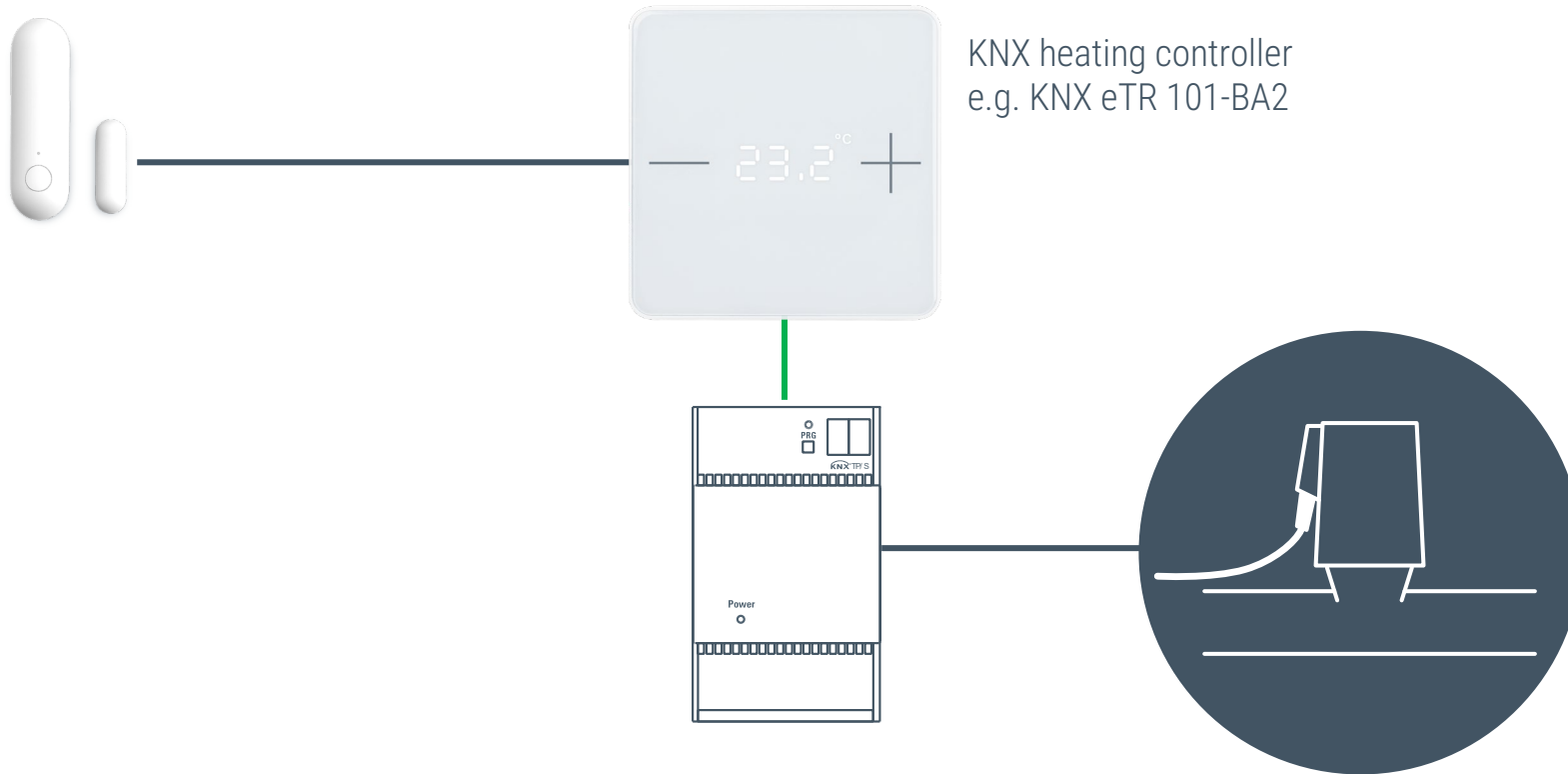


07 | PRACTICAL EXAMPLES OF PARAMETERIZATION IN THE ETS

A close-up photograph of a hand typing on a white keyboard. The image is heavily filtered with a warm, orange-toned overlay, creating a soft, ethereal atmosphere. The focus is on the fingers pressing the keys, with the background blurred. The overall composition is clean and modern, suitable for a professional presentation or document.

1. Living area: KNX eTR 101 heating controller with window contact and heating actuator

| Parameterization in the ETS



1. Parameterizing the KNX eTR 101 heating controller in the ETS

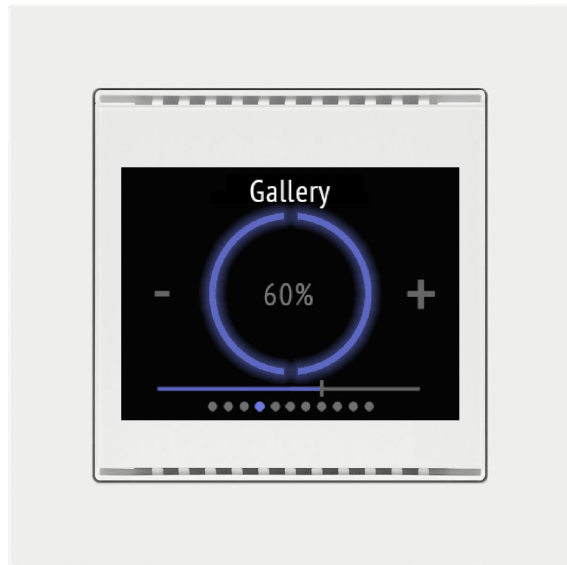
| Video



Recording
“ETS parameterization eTR”

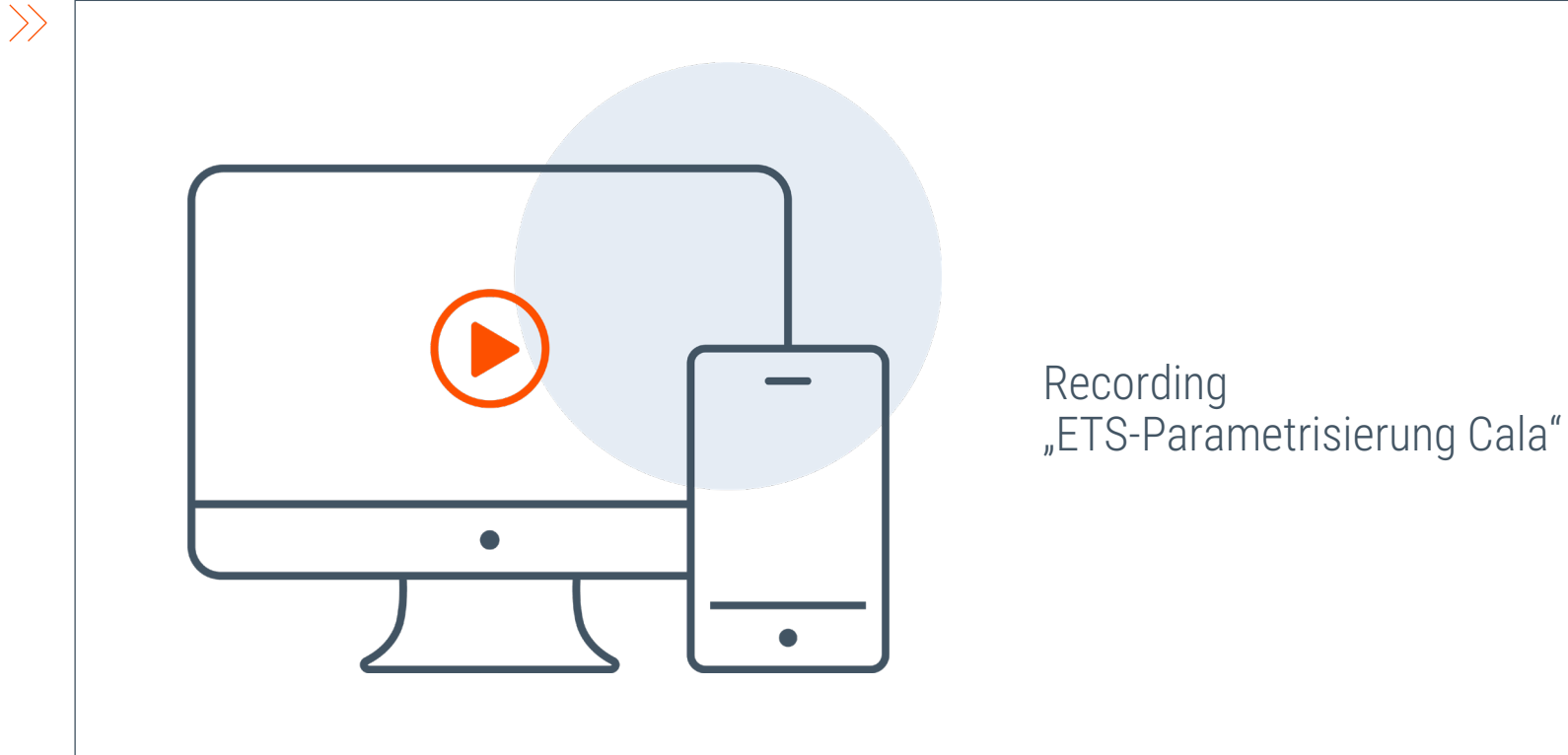
2. Office space: Heating control with Cala

| Parameterization in the ETS



2. Parameterize heating control with 2 Cala Touch KNX

| Video



3. Living area: Temperature control with Corlo + mobile app

| Parameterization in the ETS



3. Parameterize temperature control with Corlo Touch KNX 5in

| Video



Recording
“ETS parameterization Corlo”

You can find more
webinars & recordings here



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elsner-elektronik.de

Bastian Elsner
Tel | 07033 309450
info@elsner-elektronik.de