

Training ClimaECO, 2020

# Heating Controller VAA/A 6.24.2

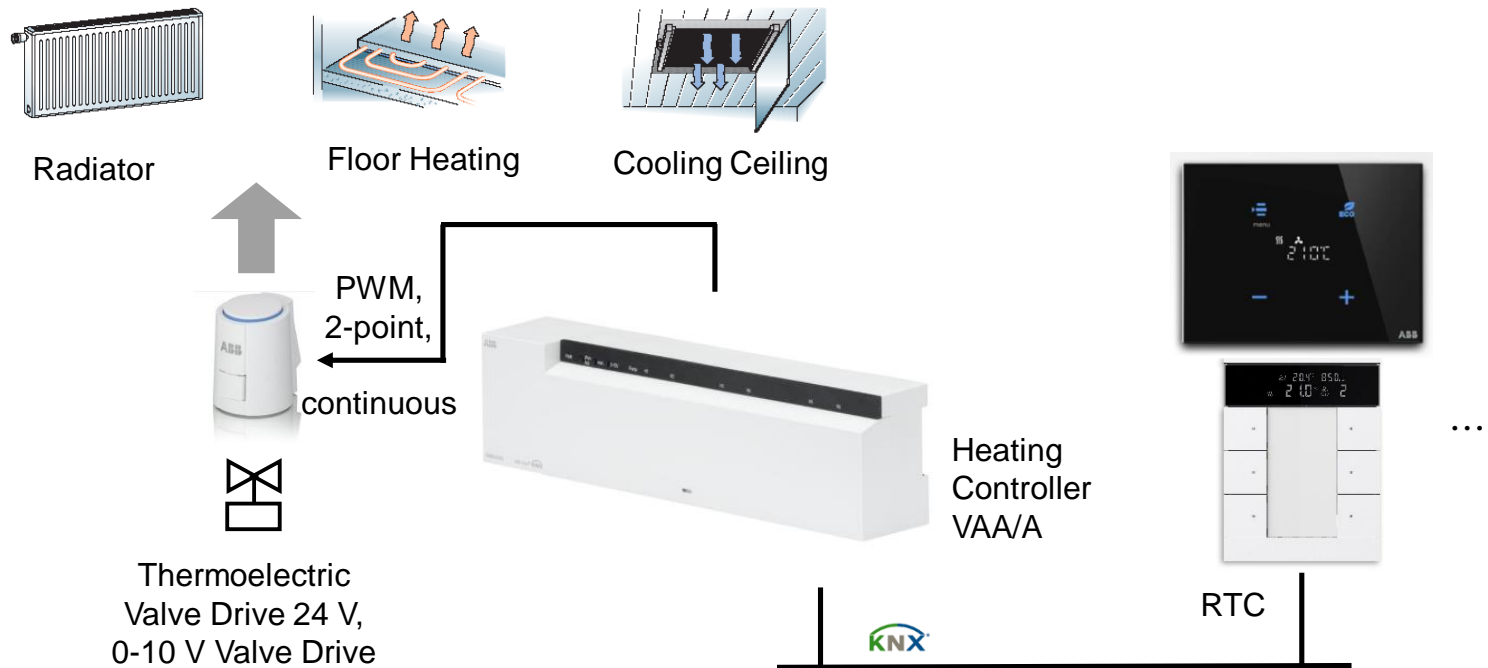
ClimaECO

Thorsten Reibel, Competence Center Europe

# Heating Controller VAA/A 6.24.2

## Introduction

### Applications Valve Control



# Heating Controller VAA/A 6.24.2

## Introduction

### Motivation – Features

- One device for valve control
- With manual operation
- Heating and Cooling
- PWM via electronic output or continuous control via 0-10 V
- Six channels for electrothermal valve drives  
24 V or 0-10 V valve drives (selectable)
- Connection terminals for two valves drives per channel, in total 12 drives
- Integrated room temperature controller (RTC)
- RTC similar to unified RTC but not the same
- Parametrizable as actuator or controller/actuator



# Heating Controller VAA/A 6.24.2

## Introduction

### Motivation – Features

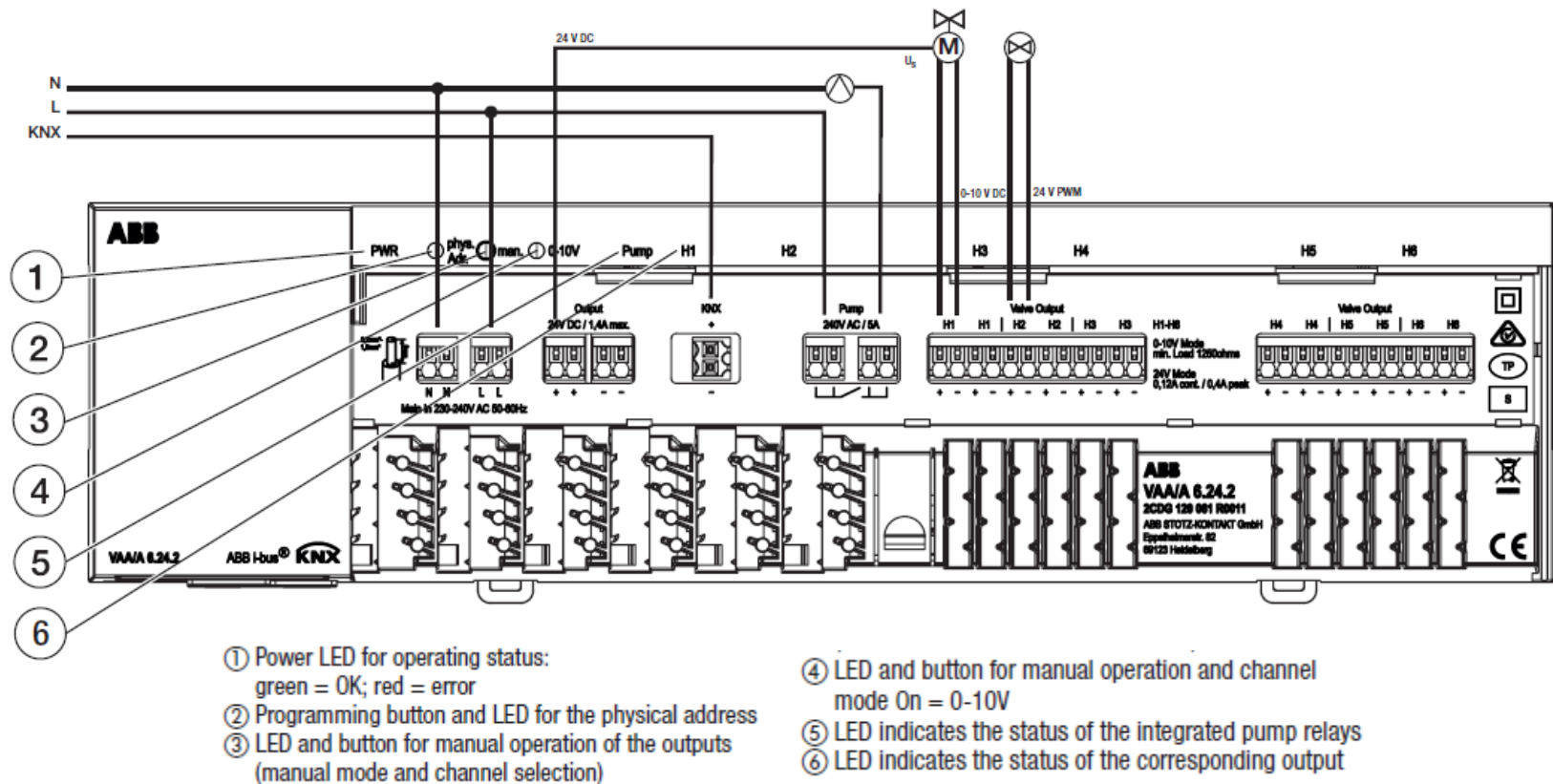
- Integration of up to two circuit pumps (one relay, one group object)
- Group object presence to activate comfort mode
- Window contact via group object connectable
- Evaluation of maximum control value of connected valves
- Forced operation with defined valve position
- Valve purge (summer mode/valve protection)
- Overcurrent protection (electronic output)
- Integrated power supply 24 V DC for valves
- Especially made for floor heating solutions to be installed in the heating distribution box
- Installation on DIN-Rail (MDRC)





# Heating Controller VAA/A 6.24.2

## Connection Diagram



# Heating Controller VAA/A 6.24.2

## Introduction

### Technical Data

Feature	VAA/A 6.24.2
Width	16 Modules
Valve Output (electronic or 0-10V)	6
Nominal Current per channel	0.12 A
Inrush current	0.4 A
Voltage	24V DC
Valve Output (0-10V)	min. 1250 Ohm
Binary Output (pump)	1 (potential free)
Voltage	240V AC
Current	5A
24 V output terminal (for valves)	Max. 1.4 A



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## Commercial Aspects

## VAA/A 6.24.2

- VAA/A 6.24.2
- 2CDG941209P0001





# Heating Controller VAA/A 6.24.2

## Application example

### VAA/A linked with KNX Room Temperature Controller



# Heating Controller VAA/A 6.24.2

## Application example

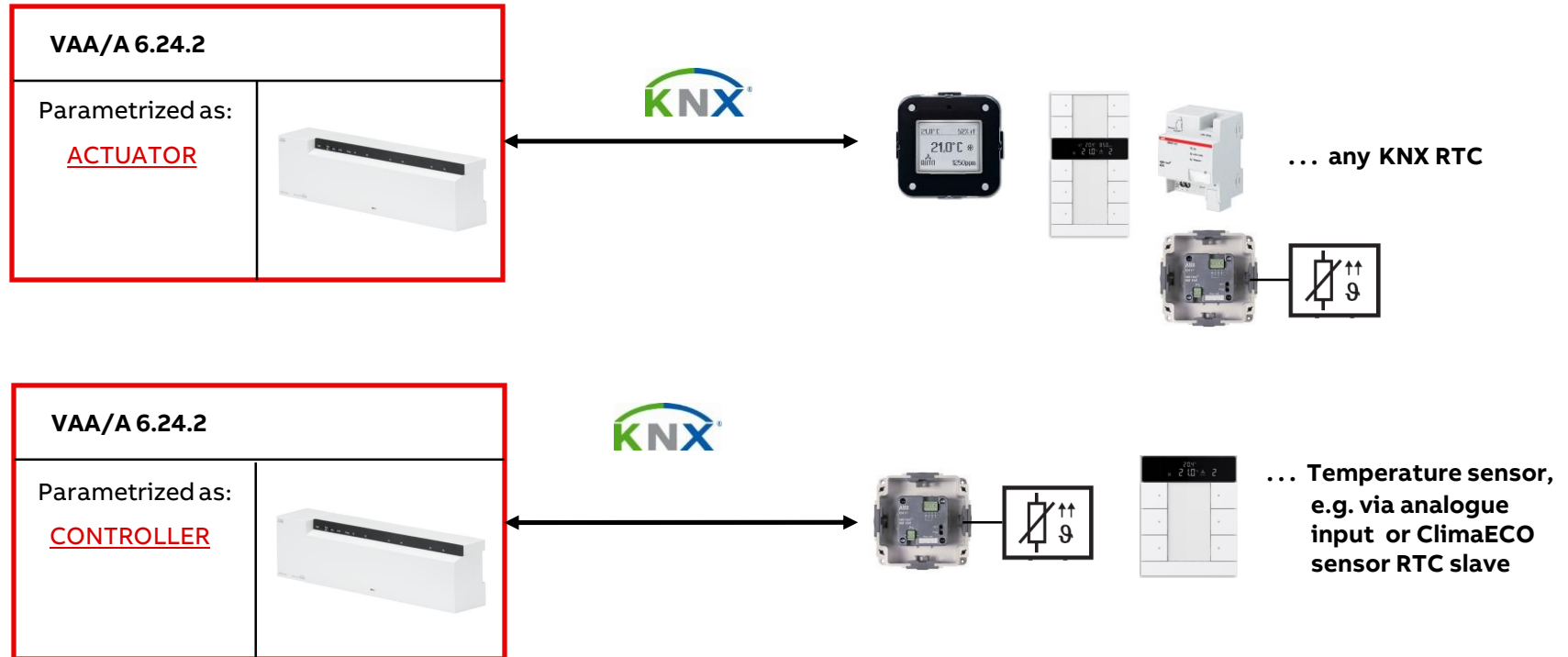
### VAA/A linked with ClimaECO sensors with temperature sensor



# Heating Controller VAA/A 6.24.2

## Application example

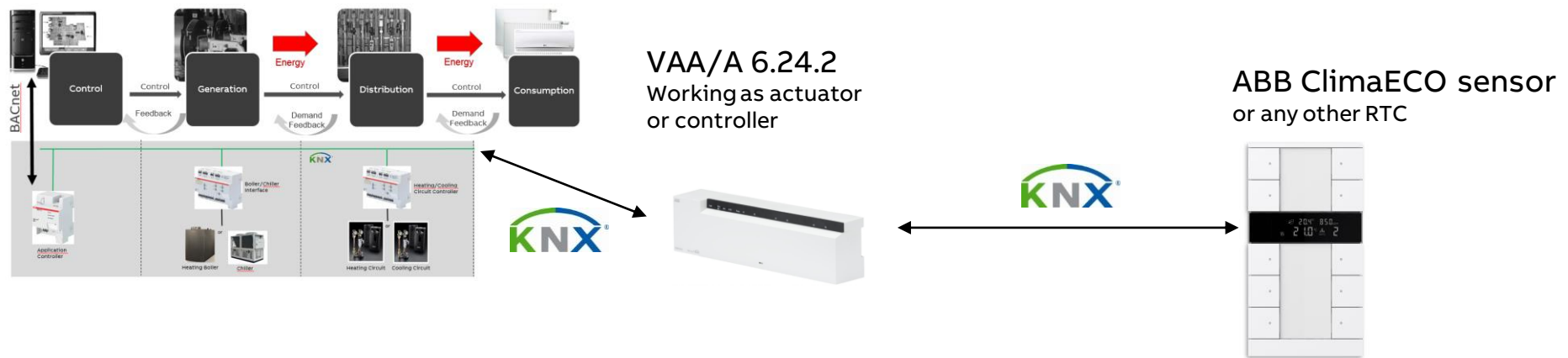
### Assignment Controller - Actuator



# Heating Controller VAA/A 6.24.2

## Application example

### VAA/A integrated in ClimaECO



# Heating Controller VAA/A 6.24.2

Which answer is correct?

## Question 1

What can be controlled with Heating Controller VAA/A 6.24.2?

**A** Radiators, floor heating or cooling ceiling

**B** 0-10V fans

**C** Motor valve drives 0-10 V

# Heating Controller VAA/A 6.24.2

Which answer is correct?

## Question 1

What can be controlled with Heating Controller VAA/A 6.24.2?

**A** Radiators, floor heating or cooling ceiling

**B** 0-10V fans

**C** Motor valve drives 0-10 V

# Heating Controller VAA/A 6.24.2

Which answer is correct?

## Question 2

What is true? Valve Drive Controller ...

- A** ... will replace Valve Drive Actuator VAA/S and Controller VC/S
- B** ... is available in 2 versions (with or without controller)
- C** ... needs the current room temperature for the internal controller

# Heating Controller VAA/A 6.24.2

Which answer is correct?

## Question 2

What is true? Valve Drive Controller ...

A

... will replace Valve Drive Actuator VAA/S and Controller VC/S

B

... is available in 2 versions (with or without controller)

C

... needs the current room temperature for the internal controller



# Heating Controller VAA/A 6.24.2

Which answer is correct?

## Question 3

What is the right statement?

- A** It is not intended to combine any KNX room temperature controller with VAA/A
- B** The Room Control Unit SAR/A can be connected to VAA/A
- C** VAA/A needs only the ambient room temperature for room temperature control

# Heating Controller VAA/A 6.24.2

Which answer is correct?

## Question 3

What is the right statement?

- ☐ A It is not intended to combine any KNX room temperature controller with VAA/S
- ☐ B The Room Control Unit SAR/A can be connected to VAA/A
- ☒ C VAA/A needs only the ambient room temperature for room temperature control

# Heating Controller VAA/A 6.24.2

ETS

## Controller or Actuator

Device works either as actuator or room temperature controller plus actuator

- Adjustable per channel
- Part actuator always available
- Function controller:
  - Integrated RTC
  - For operation a RTC with display as slave can be used, e.g. ClimaECO sensor

1.1.1 VAA/A6.24.2 Floor heating-Controller,6-fold > Channel H1 > Function

General	Channel function	<input type="radio"/> Heating actuator <input checked="" type="radio"/> Heating controller
– Channel H1	Include in summer mode	<input type="radio"/> no <input checked="" type="radio"/> yes
Function	Activate valve protection	<input type="radio"/> no <input checked="" type="radio"/> yes

New option and economical solution

# Heating Controller VAA/A 6.24.2

ETS

## Heating and Cooling

Device function actuator

- simple valve control

Device function controller

- Various hardware for heating or cooling adjustable
  - Radiator (heating)
  - Area- heating and cooling

By selecting a type of hardware the appropriate way of control is defined

User defined preselects PI control, P- and I- value can be changed

1.1.1 VAA/A6.24.2 Floor heating-Controller,6-fold > Channel H1 > Settings

General	Control	<input type="radio"/> standard <input checked="" type="radio"/> User-defined
Channel H1	Control functions used	<input type="radio"/> Only heating control <input checked="" type="radio"/> Heating and cooling
Function		
Settings		
Operating mode		
Heating control		
Setpoint values heating		
Cooling control		
Cooling setpoint values		

1.1.1 VAA/A6.24.2 Floor heating-Controller,6-fold > Channel H1 > Heating control

General	Setting the control parameters	<input checked="" type="radio"/> Via installation type <input type="radio"/> User-defined
Channel H1	System type	<input checked="" type="radio"/> Radiator heating system <input type="radio"/> Underfloor heating
Function	Send heating actuating value in cycles	With change of 5 %
Settings	Send heating actuating value in cycles	Not cyclical, only in the event of change
Operating mode		
Heating control		
Setpoint values heating		
Cooling control		

# Heating Controller VAA/A 6.24.2

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## Setpoint Adjustment

Setpoint adjustment starts from heating values

Via parameter dead zone between heating and cooling setpoints for cooling are defined

- Example: Base setpoint heating 21°C, dead zone 2K, → Setpoint cooling 23°C

1.1.1 VAA/A6.24.2 Floor heating-Controller,6-fold > Channel H1 > Setpoint values heating		
General	Base setpoint value after loading the application	21 °C
Channel H1	Minimum valid base setpoint value	10 °C
Function	Maximum valid base setpoint value	32 °C
Settings	Reduction in standby mode (during heating)	1,5 K
Operating mode	Reduction in night mode (during heating)	5 K
Heating control	Setpoint value for frost protection operation (during heating)	5 °C
Setpoint values heating	Maximum valid setpoint offset	+/- 5 K
Cooling control	Setpoint offset applies	In comfort, standby and night mode
Cooling setpoint values		

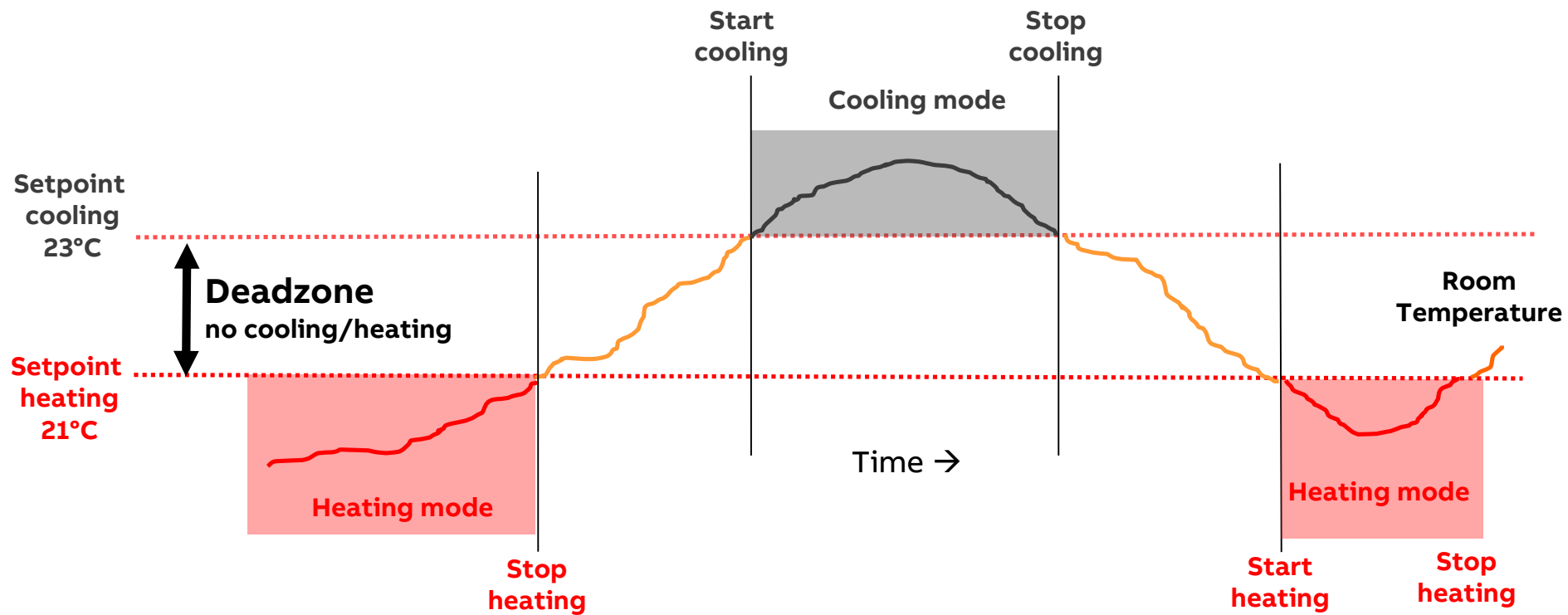
  

1.1.1 VAA/A6.24.2 Floor heating-Controller,6-fold > Channel H1 > Cooling setpoint values		
General	Dead zone between heating and cooling	2 K
Channel H1	Increase in standby mode (during cooling)	1,5 K
Function	Increase in night mode (during cooling)	5 K
Settings	Setpoint value for heat protection mode (during cooling)	42 °C i.e. no real heat protection
Operating mode		
Heating control		
Setpoint values heating		
Cooling control		
Cooling setpoint values		

# Heating Controller VAA/A 6.24.2

## Room Temperature Controller

### Setpoints



# Heating Controller VAA/A 6.24.2

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## Forced operation

1 bit telegram

Allows to set valve in defined position, e.g. in case of fault or special situation

Application: In case of boiler malfunction all valves go to 50% to achieve running water with no risk of frozen pipes in winter

1.1.1 VAA/A6.24.2 Floor heating-Controller,6-fold > Channel H1 > Forced mode

General	Actuating value in the forced operation mode	50%
Channel H1	Forced telegram	<input checked="" type="radio"/> 1 = Force (standard) <input type="radio"/> 0 = Force
Function		
Settings		
Operating mode		
Heating control		
Setpoint values heating		
Cooling control		
Cooling setpoint values		
Emergency program		
Forced mode		

# Heating Controller VAA/A 6.24.2

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## Emergency Program

Each channel can optionally execute an emergency program if the control value (heating actuator) or the actual temperature (heating controller) has failed

The control of the valve in the emergency program, can be fixed, or variable according to the outside temperature

1.1.1 VAA/A6.24.2 Floor heating-Controller,6-fold > Channel H1 > Emergency program

General

Channel H1

Function

Settings

Operating mode

Heating control

Setpoint values heating

Cooling control

Cooling setpoint values

Emergency program

Actuating value for emergency program is ☒ Fixed ☐ Ambient temperature dependent

Fixed emergency program in winter mode 20%

1.1.1 VAA/A6.24.2 Floor heating-Controller,6-fold > Channel H1 > Emergency program

General

Channel H1

Function

Settings

Operating mode

Heating control

Setpoint values heating

Cooling control

Cooling setpoint values

Emergency program

Actuating value for emergency program is ☐ Fixed ☒ Ambient temperature dependent

Emergency program active when outside temperature below 10 °C

Max. actuating value in emergency program 40%

Fixed emergency program with failure of outside temperature 20%



# Heating Controller VAA/A 6.24.2

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## Summer Mode and Valve Protection

Each channel can optionally participate in summer mode and valve protection to protect the valve

It prevents the valves from sticking if no change in the control value has been made for a longer period (7 days)

In this case the valve will be run in the opposite position to keep it going

1.1.1 VAA/A6.24.2 Floor heating-Controller,6-fold > Channel H1 > Function

General	Channel function	<input type="radio"/> Heating actuator <input checked="" type="radio"/> Heating controller
Channel H1	Include in summer mode	<input type="radio"/> no <input checked="" type="radio"/> yes
Function	Activate valve protection	<input type="radio"/> no <input checked="" type="radio"/> yes
Settings	Execute valve protection	Always

# Heating Controller VAA/A 6.24.2

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## Pump control

Integrated switching relay to control a heating/cooling circuit pump

Group object is available to control another pump

Each channel can optionally participate in no, one or both pump controls.

Pump is running when control value > 0 or triggered at all

If there is no need for heating or cooling energy, the heating circuit pumps can be switched off automatically to save energy.

1.1.1 VAA/A6.24.2 Floor heating-Controller,6-fold > Pump control > Relay

General	<div>Only switch on relay if at least (only for switch output)<div><input checked="" type="radio"/> one input actuating value is &gt; 0 % <input type="radio"/> one valve is triggered (open)</div></div>
+ Channel H1	Switch-off delay10 min
+ Channel H2	
+ Channel H3	Send relay status cyclically <div><input checked="" type="radio"/> no, only in the event of change <input type="radio"/> cyclically and at change</div>
+ Channel H4	Cycle timeEvery 30 min.
+ Channel H5	
+ Channel H6	
+ Monitoring	
- Pump control	
Relay	
Object (2nd pump)	

# Heating Controller VAA/A 6.24.2

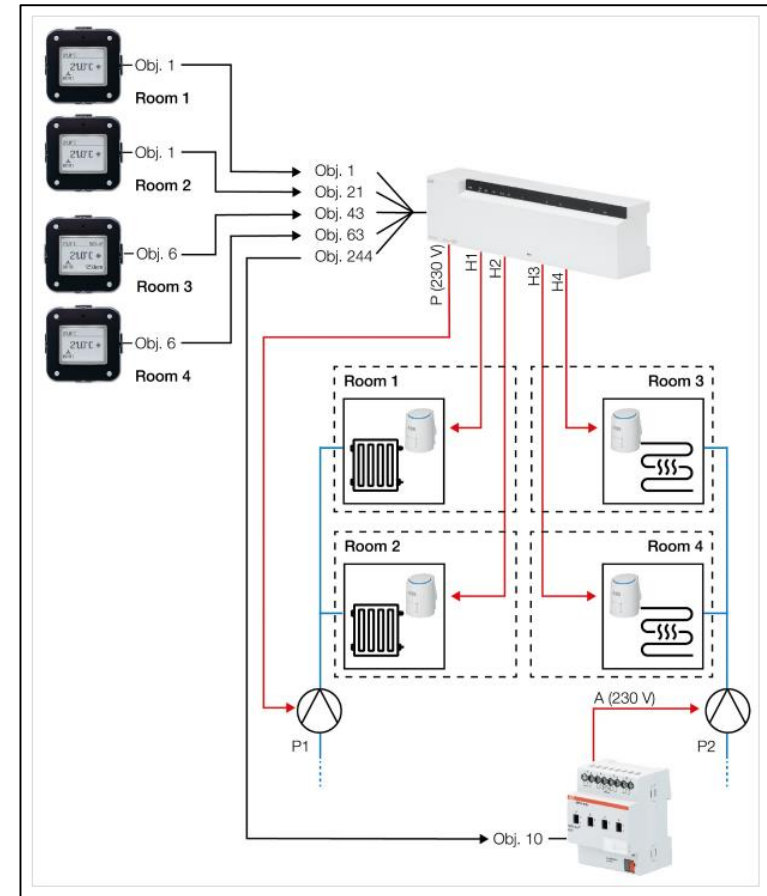
Example: Radiators, Floor Heating and two Heating Circuit Pumps

## Pump control

Four rooms, two with radiator, two with floor heating

Due to different flow temperature individual pumps are necessary

Pump 1 via internal relay contact, pump 2 via group object linked to further actuator



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