

Training ClimaECO, 2020

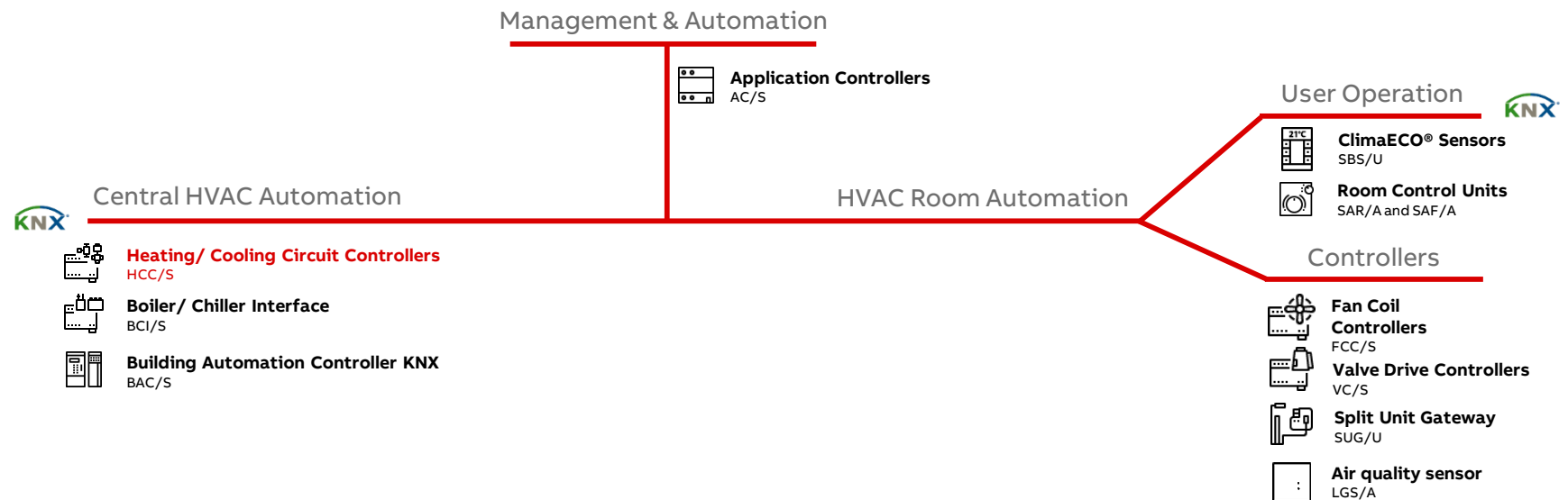
Heating Cooling Circuit Controller HCC/S 2.x.x.1

ClimaECO

Thorsten Reibel, Competence Center Europe

Heating Cooling Circuit Controller HCC/S 2.x.x.1

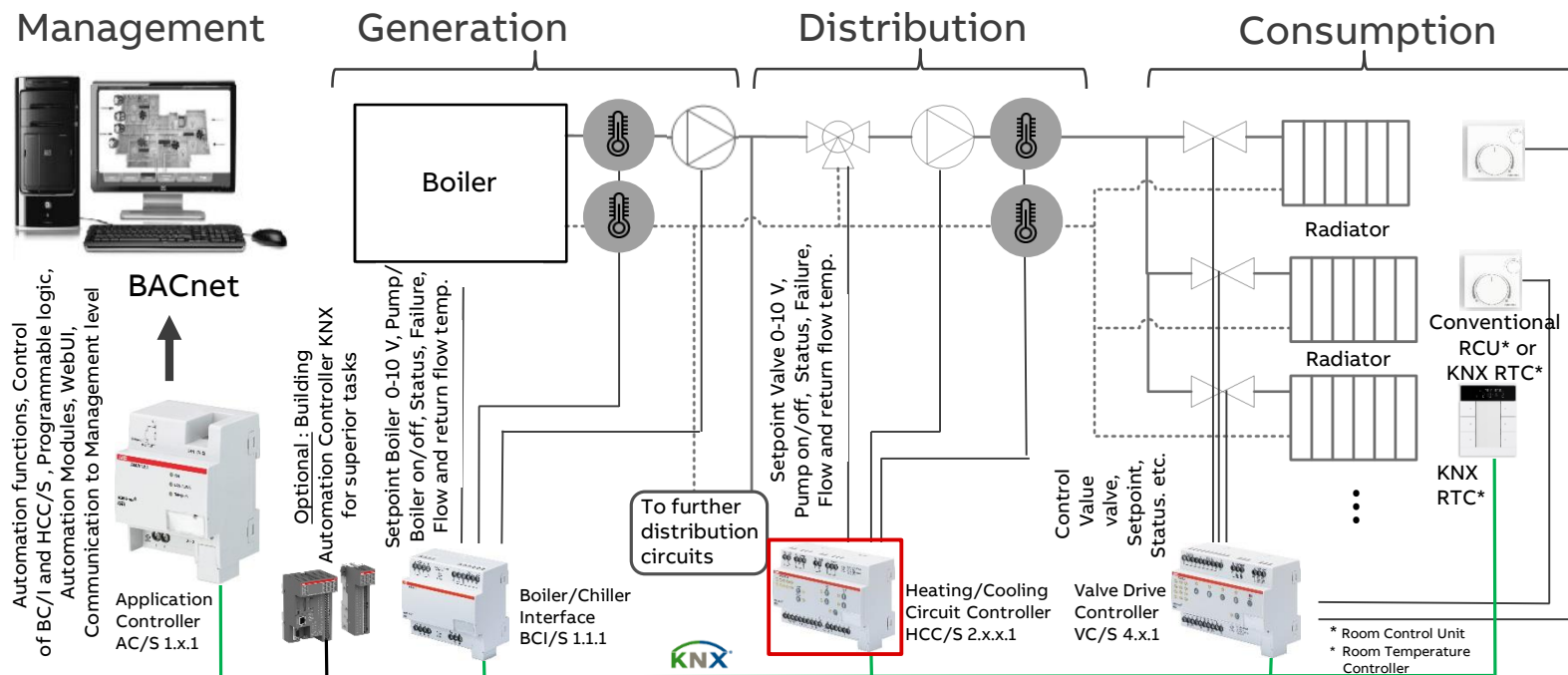
Overview ClimaECO: New Products



A holistic HVAC Building Automation System, over 30 new devices

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Overview ClimaECO: ABB i-bus® KNX HVAC Solutions



Heating Cooling Circuit Controller HCC/S 2.x.x.1

Introduction

Why Heating Cooling Circuits in a Heating/Cooling System?

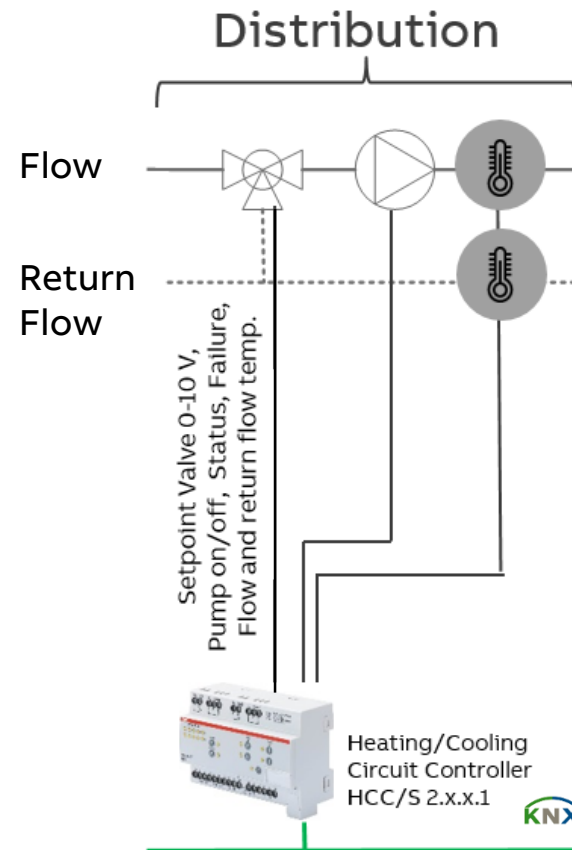
In a heating/cooling system the hot/cold water has to be distributed to various units in a building.

Units can be separate flats in a residential building, individual departments/shops in a commercial building, particular circuits for radiator or floor heating/cooling ceiling and more

Requirements of these units: Individual consumption and measurement, different water temperature and pressure, turn off of the circuit (pump off and valve closed) and more

A Heating Cooling circuit Controller together with the valve, pump and temperature sensors can handle these requirements

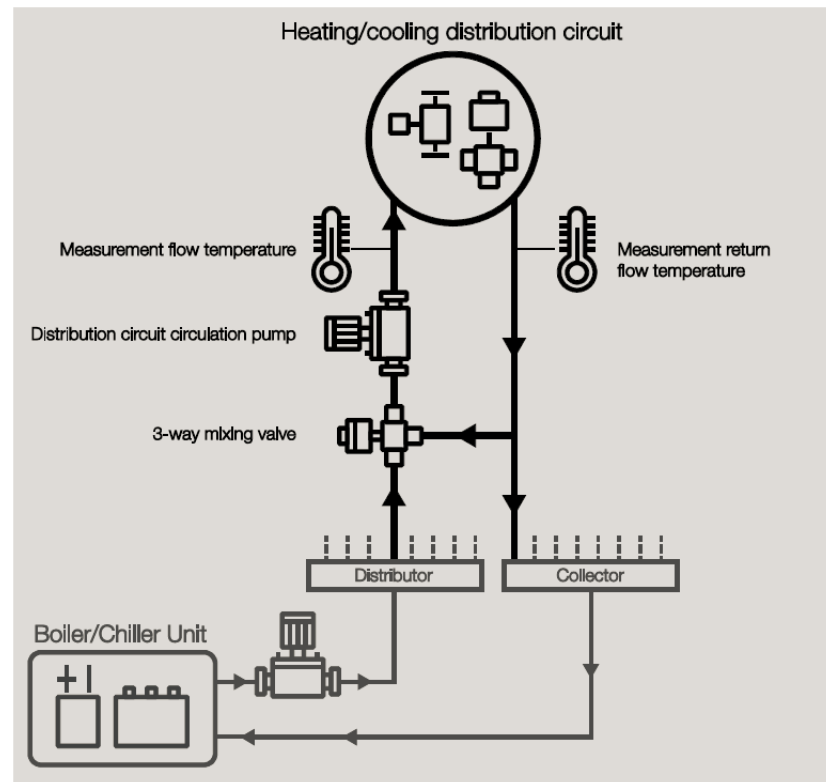
→ For a holistic approach HCC/S 2.x.x.1 from ABB based on KNX



Heating Cooling Circuit Controller HCC/S 2.x.x.1

Introduction

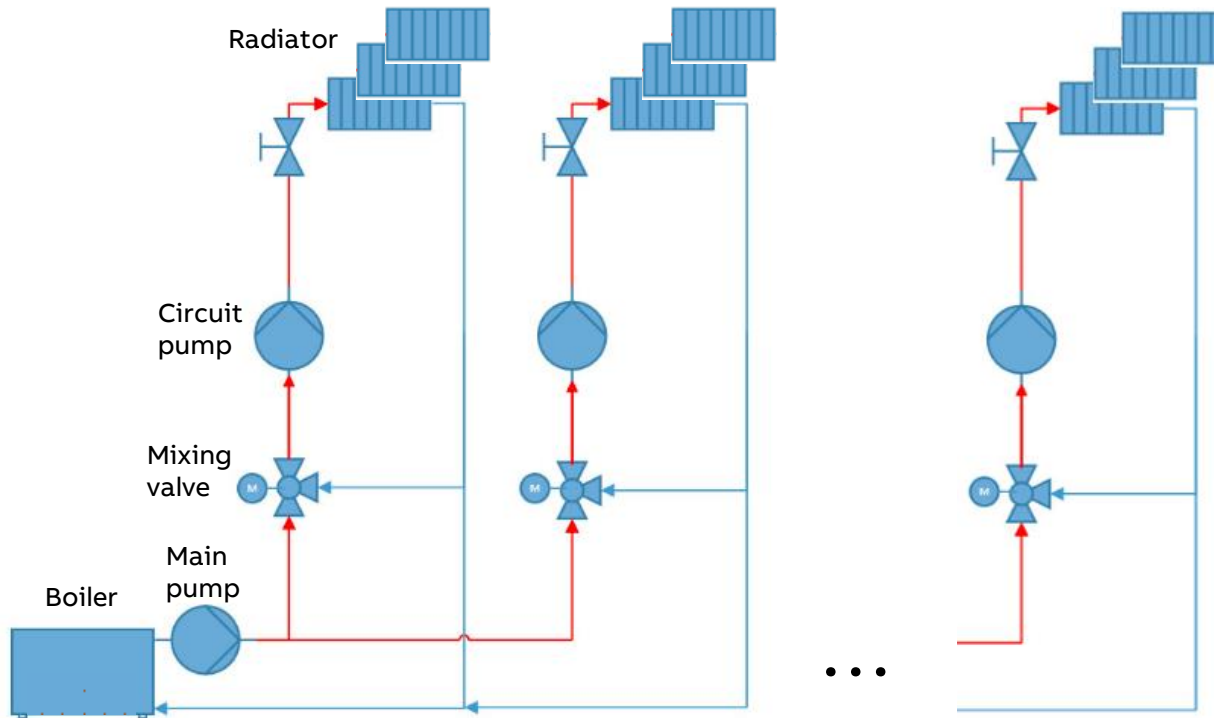
Principle Heating/Cooling Circuit



Heating Cooling Circuit Controller HCC/S 2.x.x.1

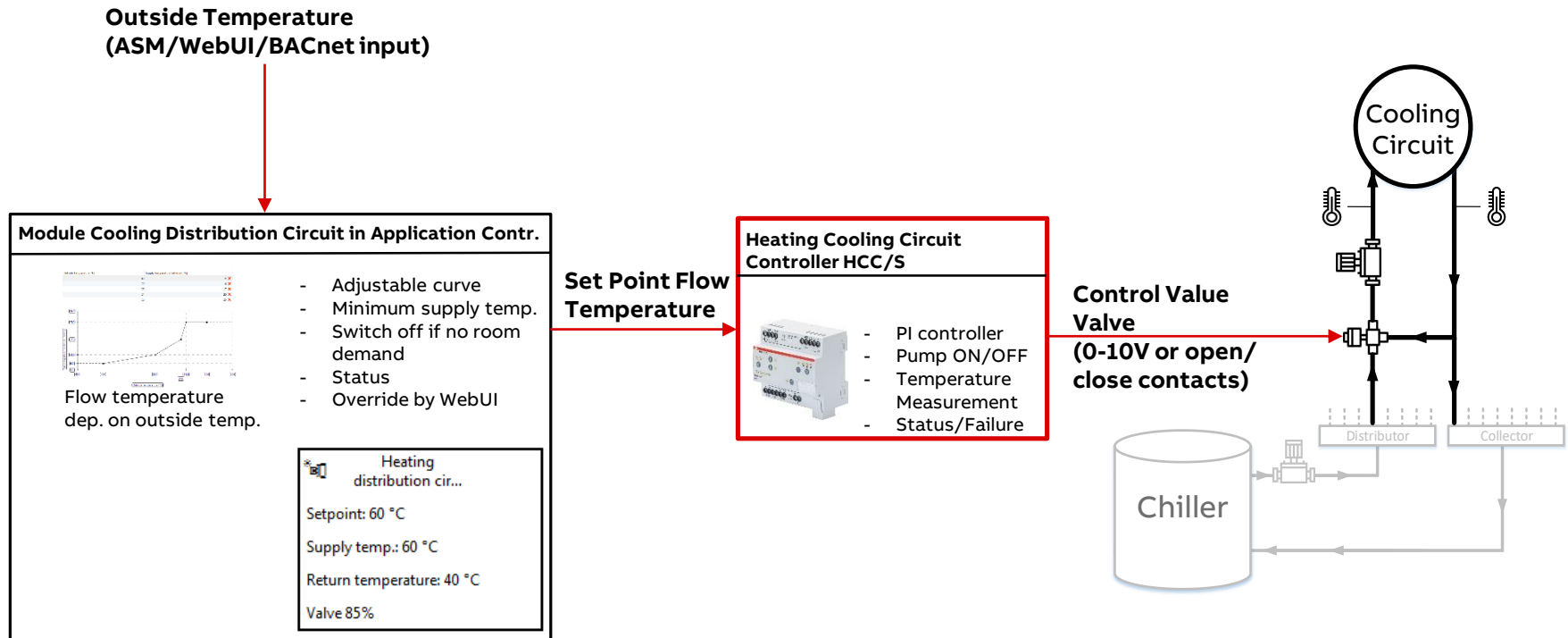
Introduction

Example: Heating System with two Heating Circuits



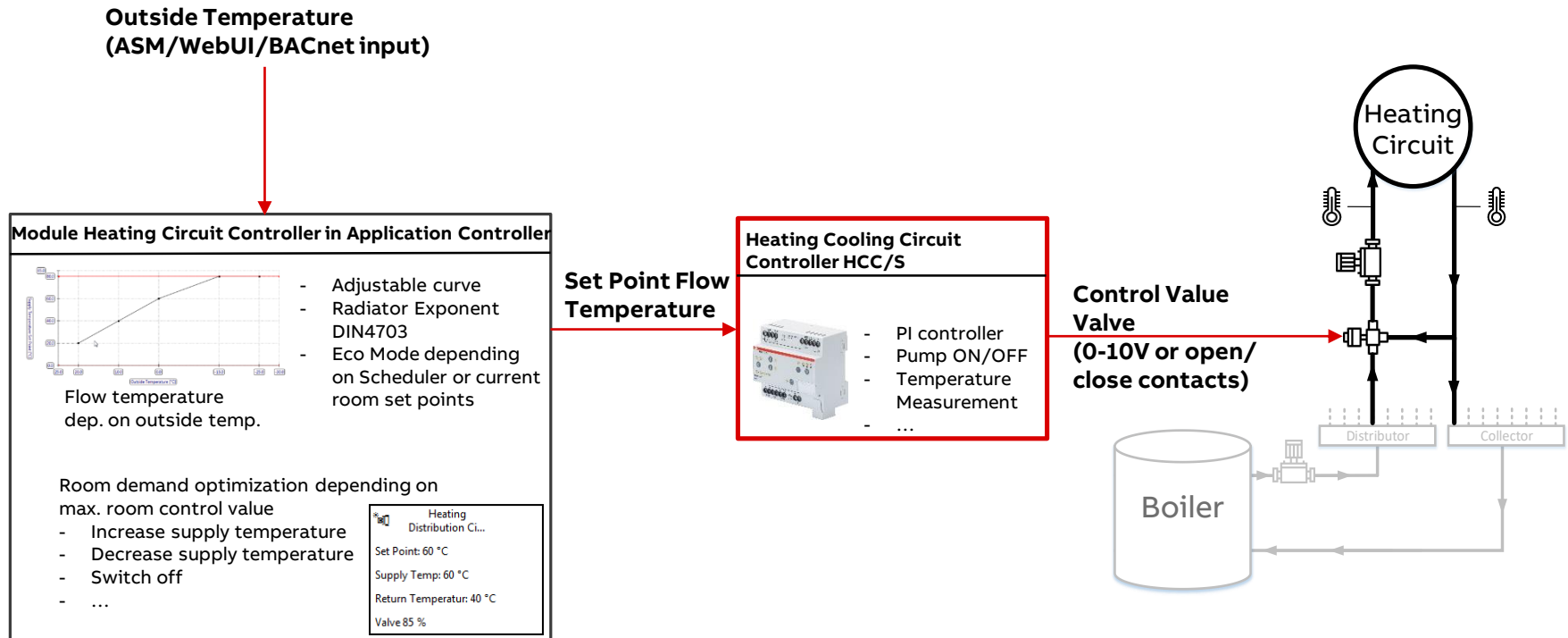
Heating Cooling Circuit Controller HCC/S 2.x.x.1

Function in context with cooling (Chiller control)



Heating Cooling Circuit Controller HCC/S 2.x.x.1

Function in context with heating (boiler control)



Heating Cooling Circuit Controller HCC/S 2.x.x.1

Introduction

Motivation – Features

- Control of Heating/Cooling Circuits **NEW**
- Expansion of ABB i-bus KNX to the Automation level
- Expansion of ABB i-bus KNX to the Distribution level
- Necessary for for a holistic approach of a HVAC solution completely with ABB i-bus KNX (Automation- and Distribution level)
- Control of 3-way valves for 0 - 10 V motor
- Control of 3-way valves for 3 point motor
- Control of pump of the heating cooling circuit
- Control of pump depending on control value
- Measurement of flow- and return flow temperature



Heating Cooling Circuit Controller HCC/S 2.x.x.1

Introduction

Motivation – Features

- 3 binary inputs each channel for status pump messages or other functions
- Integrated PI controller
- Controller or Actuator
- Forced operation
- With or without manual operation
- 2 independent channels:
 - two heating/cooling circuits
 - One heating/cooling circuit with double pump mode (Redundancy)
- 4 devices with/without manual operation and for 0-10V/3-point mixing valve drives
- ABB i-bus tool support



Heating Cooling Circuit Controller HCC/S 2.x.x.1

Product Range

Family HCC/S 2.x.x.2



HCC/S 2.1.1.1

- 2 Channels
- 0-10 V valve drives
- 2 temp. inputs/ch.
- 3 binary inputs/ch.
- No manual operation



HCC/S 2.1.2.1

- 2 Channels
- 0-10 V valve drives
- 2 temp. inputs/ch.
- 3 binary inputs/ch.
- Manual operation



HCC/S 2.2.1.1

- 2 Channels
- Motor valve drives
- 2 temp. inputs/ch.
- 3 binary inputs/ch.
- No manual operation



HCC/S 2.2.2.1

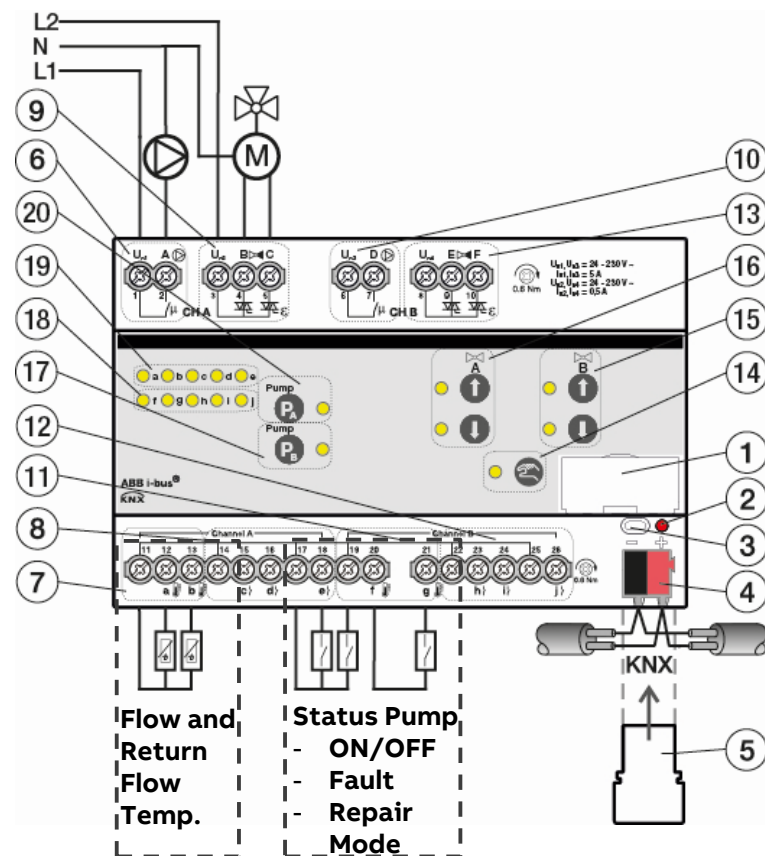
- 2 Channels
- Motor valve drives
- 2 temp. inputs/ch.
- 3 binary inputs/ch.
- Manual operation

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Product Range

HCC/S 2.2.x.1 (Motor Valve Drive)

1. Label carrier
2. KNX programming button
3. KNX programming LED (red)
4. KNX connection
5. Cover cap
6. Relais output (Pump) CH A
7. Temperature inputs CH A
8. Binary inputs (Pump) CH A
9. Valve output CH A
10. Relais output (Pump) CH B
11. Temperature inputs CH B
12. Binary inputs (Pump) CH B
13. Valve Output CH B
14. - 20. Manual operation

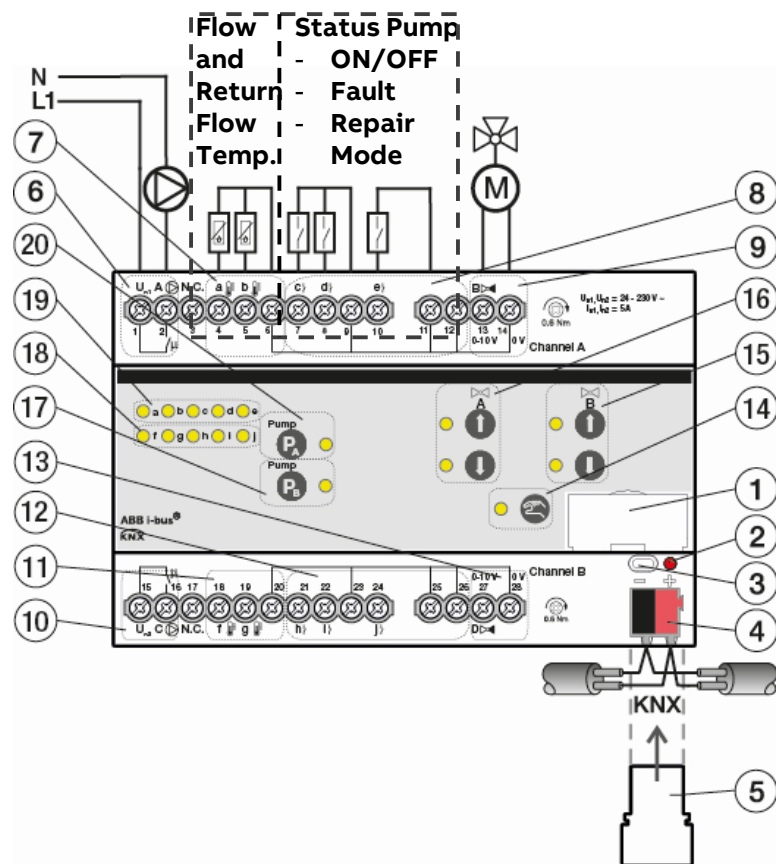


Heating Cooling Circuit Controller HCC/S 2.x.x.1

Product Range

HCC/S 2.1.x.1 (0-10 V Valve Drive)

1. Label carrier
2. KNX programming button
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11. Temperature inputs CH B
12. Binary inputs (Pump) CH B
13. Valve Output CH B
14. - 20. Manual operation



Heating Cooling Circuit Controller HCC/S 2.x.x.1

Product Range

Family HCC/S 2.x.x.1 – Functional Overview

Function/device	HCC/S 2.1.1.1	HCC/S 2.1.2.1	HCC/S 2.2.1.1	HCC/S 2.2.2.1
Integrated temperature controller for heating or cooling mixing circuits	x	x	x	x
Number of channels	2	2	2	2
Type of valve actuation	0-10 V	0-10 V	3-point (motor-driven)	3-point (motor-driven)
Inputs for sensors per channel	5	5	5	5
Inputs for temperature measurement	2	2	2	2
Inputs for pump status	3	3	3	3
Pump output per channel Relay (5 A)	1	1	1	1
Manual operation	-	x	-	x

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Introduction

Technical Data

Feature	HCC/S 2.x.x.1
Width	6 Modules
Valve Output (Motor, 3point)	2
Nominal Current	0,5 A
Inrush current	1,6 A for 10 s
Voltage	24 ... 230V AC
Valve Output (0-10V DC)	2
Load	> 10 kOhm
Current (limited)	< 1,5 mA
Output Pump	2
Current (resistive load)	5 A
Binary Input	6
Scanning voltage	12V
Scanning current	1mA
Cable length	< 100m
Analogue Inputs (Temperature)	4
PT100, PT1000	2 wires
KT, KTY, NI, NTC,	Various resistances

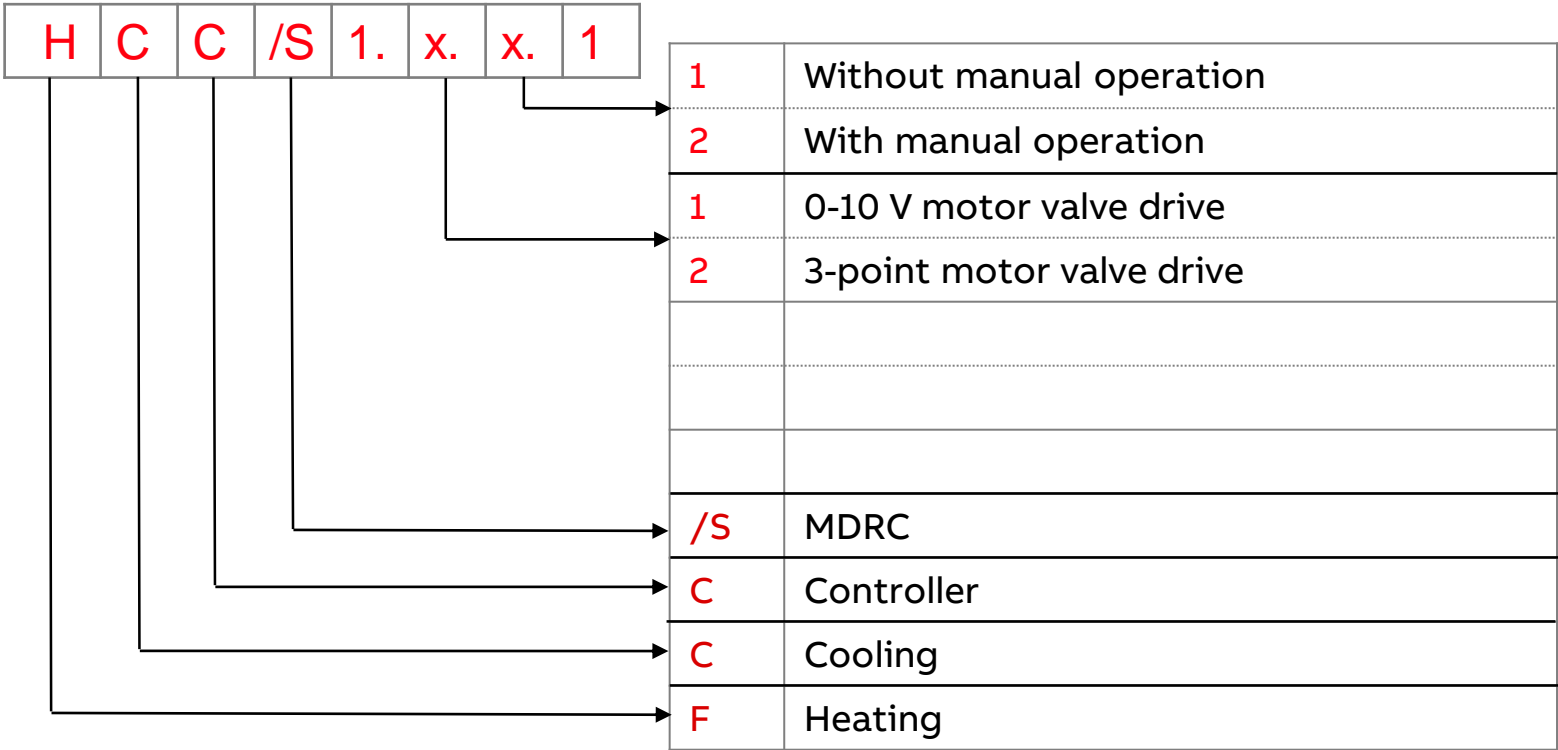




Heating Cooling Circuit Controller HCC/S 2.x.x.1

Product Range

Family HCC/S 2.x.x.1 – Type Description



Heating Cooling Circuit Controller HCC/S 2.x.x.1

Commercial Aspects

Family HCC/S 2.x.x.2



HCC/S 2.1.1.1
– 2CDG 110 218 R0011



HCC/S 2.1.2.1
– 2CDG 110 219 R0011



HCC/S 2.2.1.1
– 2CDG 110 220 R0011

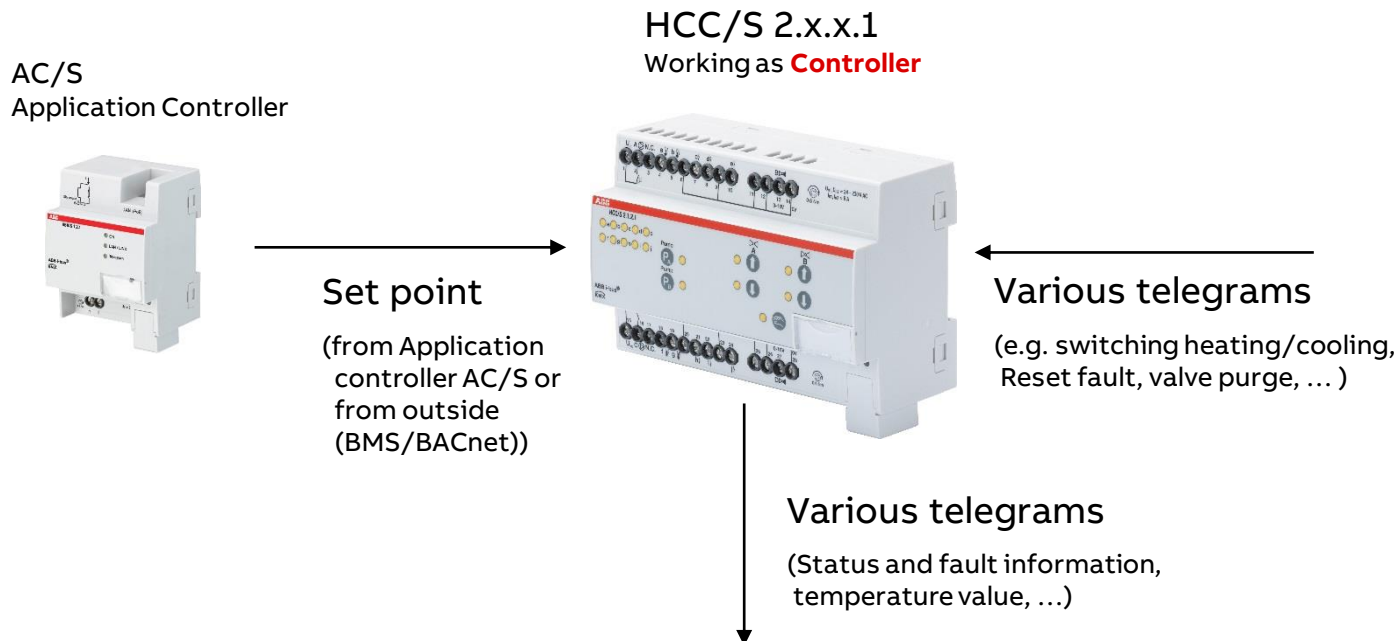


HCC/S 2.2.2.1
– 2CDG 110 221 R0011

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Application Example

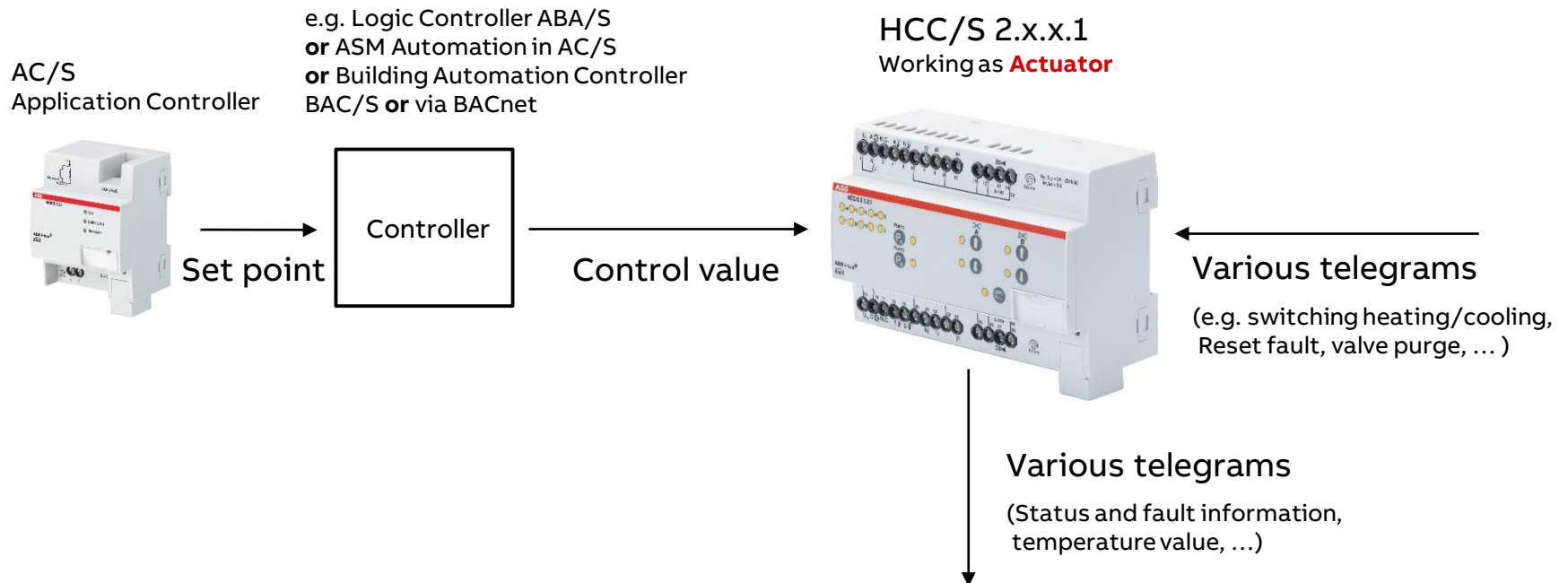
HCC/S linked in KNX with ...



Heating Cooling Circuit Controller HCC/S 2.x.x.1

Application Example

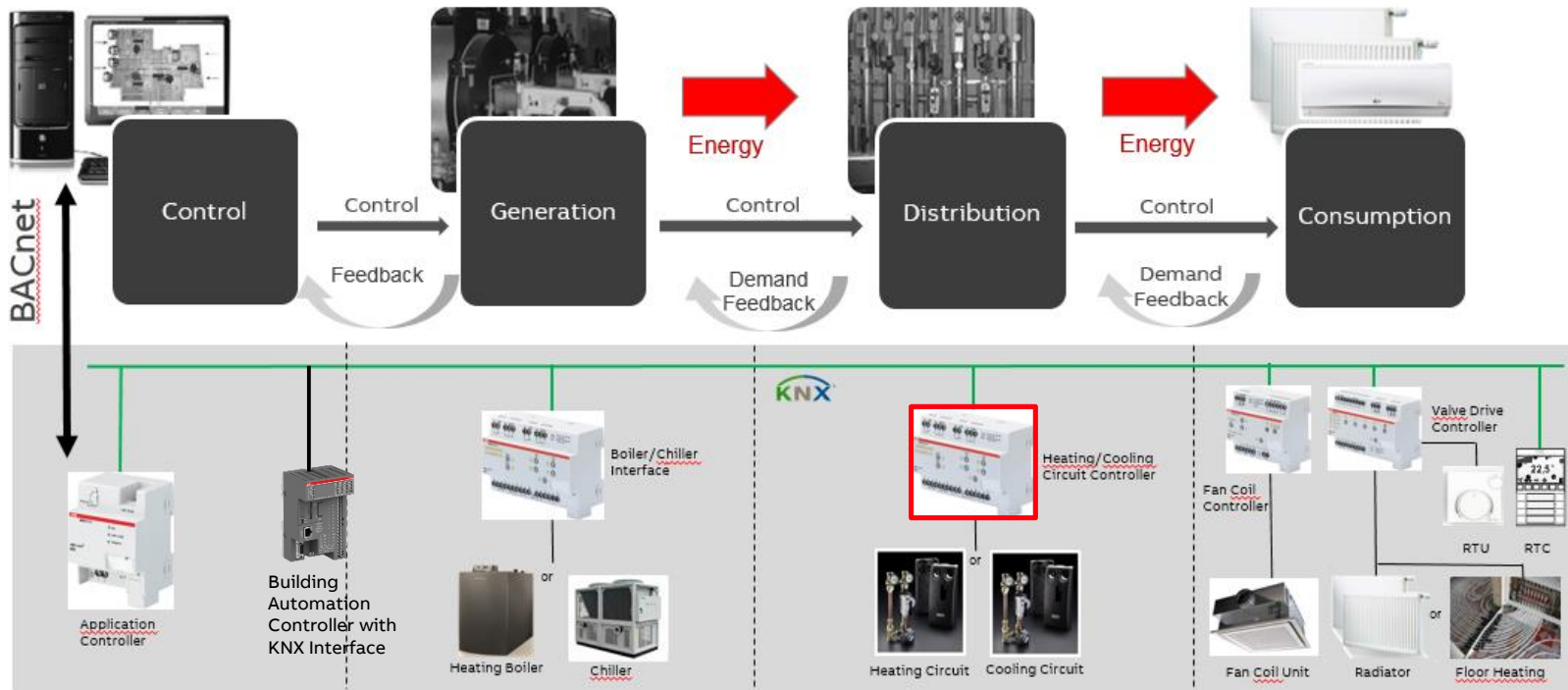
HCC/S linked in KNX with ...



Heating Cooling Circuit Controller HCC/S 2.x.x.1

Application Example

HCC/S integrated in ClimaECO



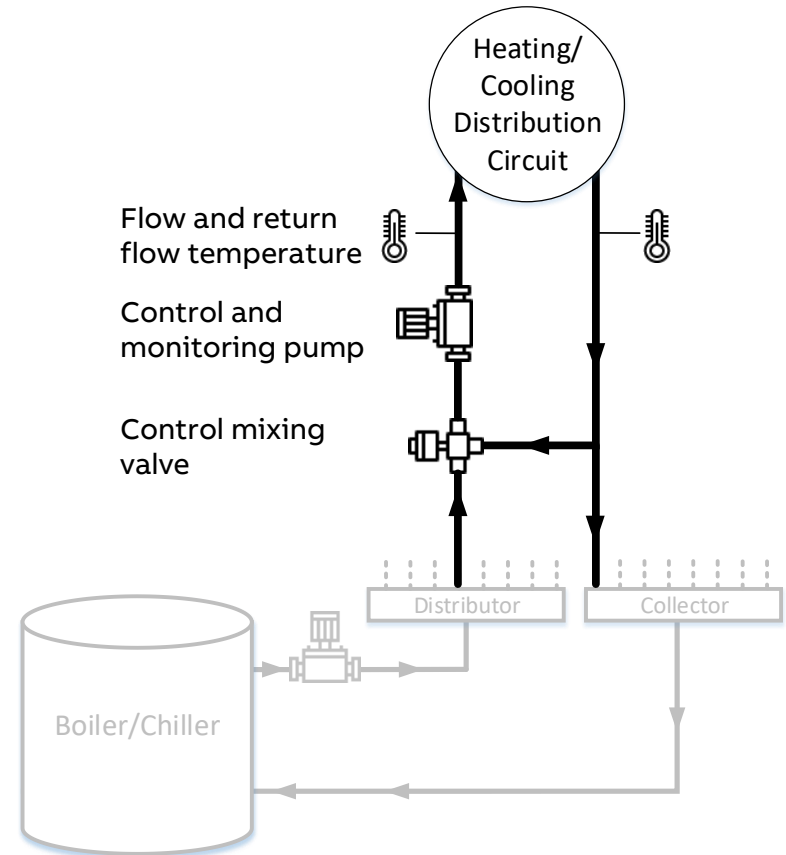
Heating Cooling Circuit Controller HCC/S 2.x.x.1

Function

Single pump

One pump per Heating/Cooling Circuit (standard)

- Operation via relay contact in HCC/S
- If available from the pump, connected via binary input of HCC/S:
 - Pump running (Status pump)
 - Pump fault
 - Repair switch pump (pump manually switched off)
- ETS parameter: pump running depending on control value threshold, follow up time, closing valve when pump off



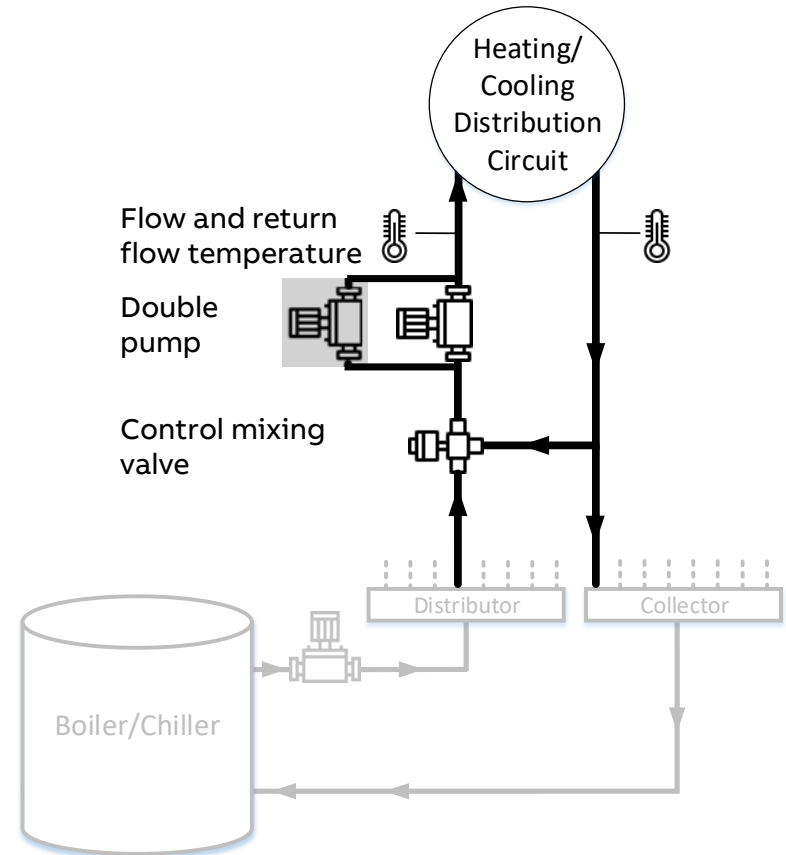
Heating Cooling Circuit Controller HCC/S 2.x.x.1

Function

Double pump

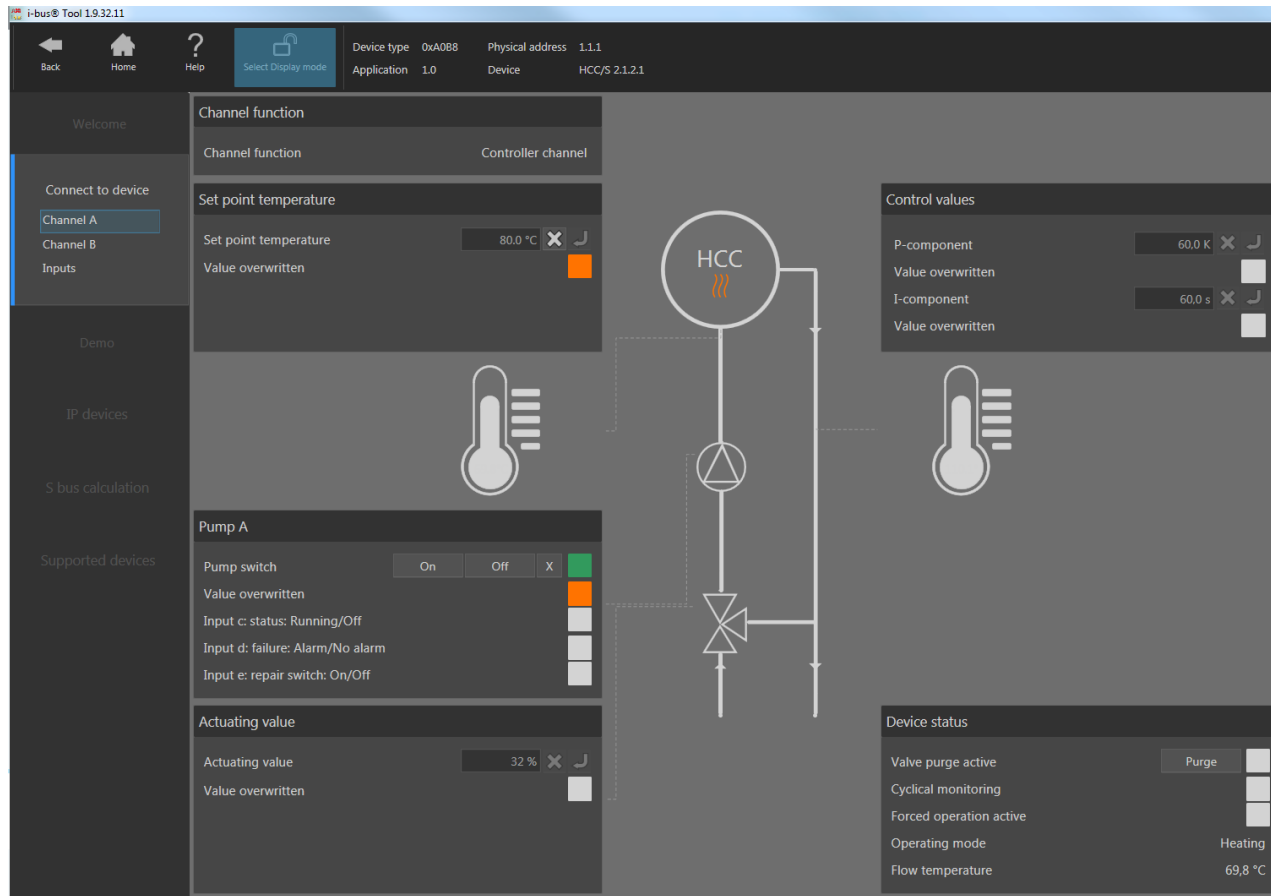
Two pumps per Heating/Cooling Circuit (Redundancy)

- Operation via relay contacts in HCC/S
- Channel 1 main pump, channel 2 backup pump or vice versa
- Change of running pump in case of failure takes place automatically
- Weekly change between both pumps possible
- Manual change via telegram anytime possible
- **In case of double pump:**
 - Channel 2 only inputs and relay
 - Only one controller, only one heating/cooling circuit left



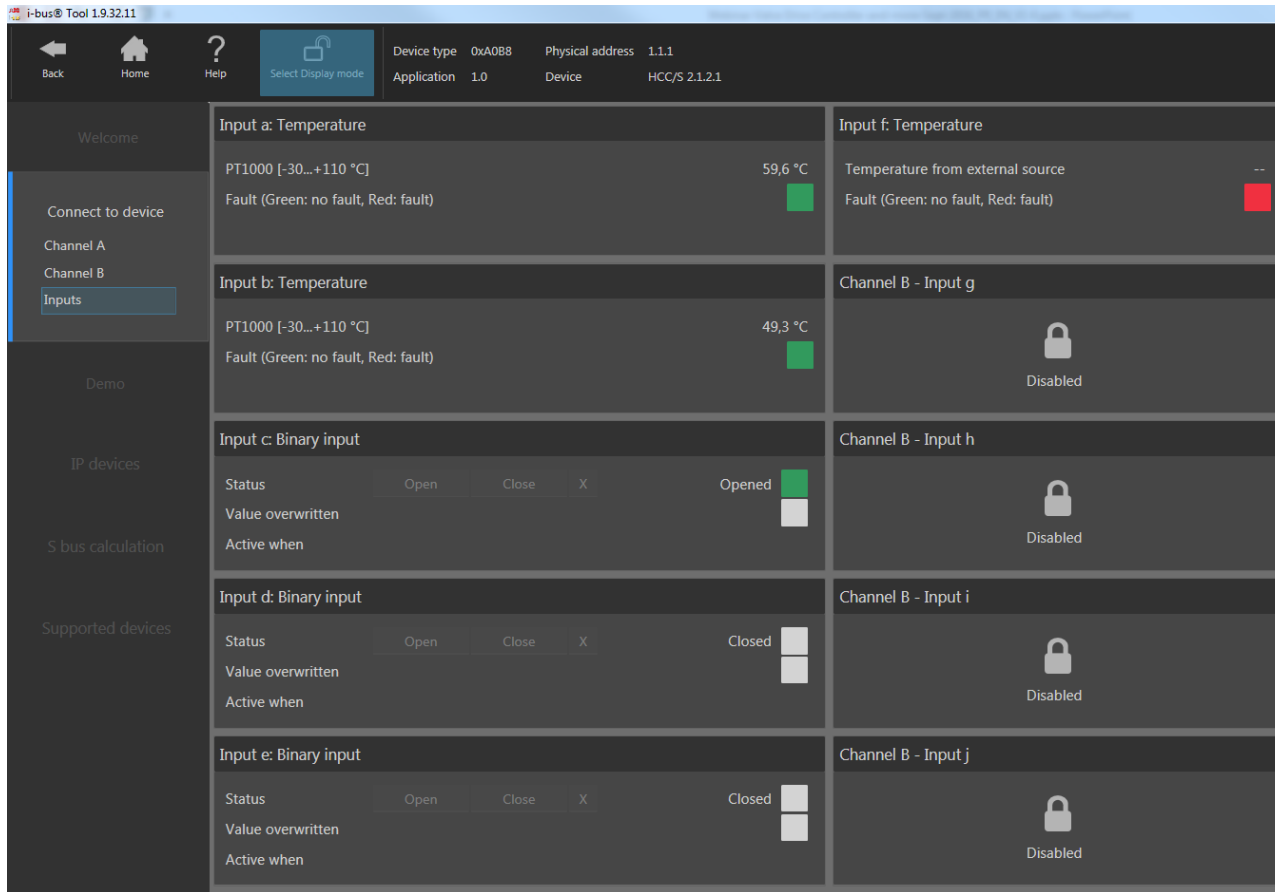
Heating Cooling Circuit Controller HCC/S 2.x.x.1

ABB i-bus Tool



Heating Cooling Circuit Controller HCC/S 2.x.x.1

ABB i-bus Tool



Heating Cooling Circuit Controller HCC/S 2.x.x.1

Support

Technical documents

www.abb.com/KNX

→ Product category

→ Heating, Ventilation, Air Conditioning

→ HCC/S

- Product Manual
- Technical datasheet
- Installation and operating instructions
- Specification Text
- ETS Application
- Application Note
- CE declaration of conformity
- . . .

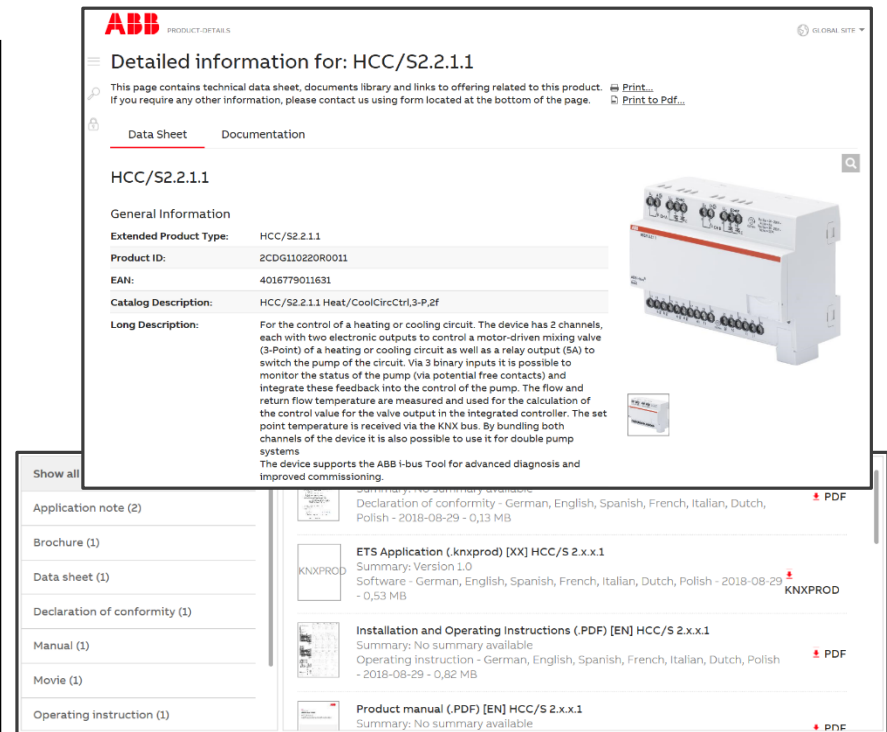


ABB PRODUCT-DETAILS

Detailed information for: HCC/S2.2.1.1

This page contains technical data sheet, documents library and links to offering related to this product. If you require any other information, please contact us using form located at the bottom of the page. [Print...](#) [Print to Pdf...](#)

[Data Sheet](#) [Documentation](#)

HCC/S2.2.1.1

General Information

Extended Product Type: HCC/S2.2.1.1

Product ID: 2CDG110220R0011

EAN: 4016779011631

Catalog Description: HCC/S2.2.1.1 Heat/CoolCircCtrl,3-P,2f

Long Description:

For the control of a heating or cooling circuit. The device has 2 channels, each with two electronic outputs to control a motor-driven mixing valve (3-Point) of a heating or cooling circuit as well as a relay output (SA) to switch the pump of the circuit. Via 3 binary inputs it is possible to monitor the status of the pump (via potential free contacts) and integrate these feedback into the control of the pump. The flow and return flow temperature are measured and used for the calculation of the control value for the valve output in the integrated controller. The set point temperature is received via the KNX bus. By bundling both channels of the device it is also possible to use it for double pump systems. The device supports the ABB I-bus Tool for advanced diagnosis and improved commissioning.

Show all

Application note (2)

Brochure (1)

Data sheet (1)

Declaration of conformity (1)

Manual (1)

Movie (1)

Operating instruction (1)

Declaration of conformity - German, English, Spanish, French, Italian, Dutch, Polish - 2018-08-29 - 0,13 MB

ETS Application (.knxprod) [XX] HCC/S 2.x.x.1

Summary: Version 1.0

Software - German, English, Spanish, French, Italian, Dutch, Polish - 2018-08-29 - 0,53 MB

Installation and Operating Instructions (.PDF) [EN] HCC/S 2.x.x.1

Summary: No summary available

Operating Instruction - German, English, Spanish, French, Italian, Dutch, Polish - 2018-08-29 - 0,82 MB

Product manual (.PDF) [EN] HCC/S 2.x.x.1

Summary: No summary available

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 1

What is the purpose of a Heating Cooling Circuit Controller HCC/S 2.x.x.1?

A

Control of Heater

B

Control of heating or cooling circuits

C

Control of Boiler or Chiller

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 1

What is the purpose of a Heating Cooling Circuit Controller HCC/S 2.x.x.1?

A

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B

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C

Control of Boiler or Chiller

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 2

What is the right statement?

- A** Heating/Cooling circuit control is necessary to provide the right water temperature to a circuit
- B** An external controller is required for using HCC/S
- C** Heating/Cooling circuit control is mandatory for any Heating Cooling System

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 2

What is the right statement?

- ☒ **A** Heating/Cooling circuit control is necessary to provide the right water temperature to a circuit
- ☐ **B** An external controller is required for using HCC/S
- ☐ **C** Heating/Cooling circuit control is mandatory for any Heating Cooling System

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 3

HCC/S family consists of 4 devices. What are the differences between the individual products you can get?

- A** Either actuator or controller
- B** Either digital or analogue outputs for mixing valve
- C** Either with or without manual operation

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 3

HCC/S family consists of 4 devices. What are the differences between the individual products you can get?

A

Either actuator or controller

B

Either digital or analogue outputs for mixing valve

C

Either with or without manual operation

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 4

What is true? HCC/S devices allow to control directly ...

A ... 6 way valves

B ... electrothermal valves

C ... 0-10 V fan

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 4

What is true? HCC/S devices allow to control directly ...

A ... 6 way valves

B ... electrothermal valves

C ... 0-10 V fan

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 5

How many outputs for mixing valve exist in the HCC/S?

A 0

B 2

C 1

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 5

How many outputs for mixing valve exist in the HCC/S?

A 0

B 2

C 1

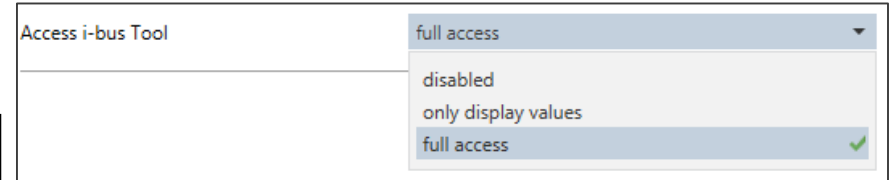
Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Access i-bus tool

Three options to handle the i-bus tool access

- Deactivated:
 - No operation, no indication
- Display only:
 - No operation, full indication
- Full access:
 - Full operation and indication



Higher security and user friendliness

Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Controller or Actuator

Device works either as actuator for pump and valve control or in addition as controller (PI control) for the control value of the 3-way valve

In case of actuator only, control value has to be calculated from external controller, e.g. in logic controller ABA/S 1.2.1

Device function



controller device



actuator device

Device uses the integrated controller for the temperature control

Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Forced operation

1 bit or 2 bit telegram

Allows to set a defined position for the valve and switch pump on or off or controlled depending on control value

Individual control

1.1.1 HCC/S2.2.2.1 heating/cooling contr.,3-point>manual operation,2-fold,MDRC > Channel A > Monitoring and safety

General	Use forced operation	Forced operation 1 bit; 1 active
+ Manual operation	Control value	30 %
- Channel A	Pump state	Follows valve control value (corresp. pump automatic)
Application parameters	Cyclical monitoring	<input checked="" type="radio"/> Deactivated <input type="radio"/> Activated
Channel function		
Monitoring and safety		

Channel 1 - Common	Forced operation 1-bit	1 bit
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Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Forced operation – 2 bit

2 bit command allows to define 4 different situations, 3 are used here:

- Forced on (value '3'): defined status for valve position in %
Pump either ON or operated depending on control value
- Forced off (value '2'): another defined status for valve, pump either OFF or operated depending on control value (thresholds pump ON/OFF)
- Release (value '0 or 1'): status for valve and pump depending on control value telegrams on related group objects

Individual control

1.1.1 HCC/S2.2.2.1 heating/cooling contr.,3-point>manual operation,2-fold,MDRC > Channel A > Monitoring and safety

General	Use forced operation	Forced operation 2 bit
+ Manual operation	Control value for forced operation ON	50 %
- Channel A	Pump state for forced operation ON	<input checked="" type="radio"/> Start pump <input type="radio"/> Follows valve control value (corresp. pump aut...
Application parameters	Control value for forced operation OFF	0 %
Channel function	Pump state for forced operation OFF	<input type="radio"/> Switch off pump <input checked="" type="radio"/> Follows valve control value (corresp. pump aut...
Monitoring and safety		
Pump		

Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Cyclic monitoring temperature

Values information can be monitored concerning reception of the signal within a defined time interval

- Supply flow temperature
- Set point temperature

Certain values can be activated in case of malfunction to guarantee safe operation

Monitoring and safety	
Pump	Cyclical monitoring <input type="radio"/> Deactivated <input checked="" type="radio"/> Activated
a: Supply flow temperature	Monitor supply flow temperature <input type="text" value="As input for supply flow temperature"/>
b: Return flow temperature	Control value on input fault <input type="text" value="25"/> %
c: Binary input	Note: Configuration in parameter window 'a: Supply flow temperature'
d: Binary input	Monitor receipt of setpoint temperature group object <input type="radio"/> Deactivated <input checked="" type="radio"/> Activated
e: Binary input	Time interval for cyclical monitoring <input type="text" value="00:05:00"/> h:mm:ss
Valve output B/C	Heating setpoint temperature when monitoring time exceeded <input type="text" value="50"/> °C

Safe Operation

Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Pump

Thresholds for switching pump on and off depending on actuating value (control value)

Run-on time: period the pump is still running after OFF command

Valve can be automatically closed when pump is switched off

External pump control (pump overdrive)

Status information to be connected either to the inputs or sent as telegram

- Status pump on/off
- Pump failure
- Pump repair mode detection (pump manually turned off)

Availability of status information depending on pump used in the installation

1.1.1 HCC/S2.2.2.1 heating/cooling contr.,3-point>manual operation,2-fold,MDRC > Channel A > Pump

General	Pump switches on when valve control value is exceeded	5	%
+ Manual operation	Pump switches off when valve control value below (0= shutdown deactivated)	2	%
- Channel A	Run-on time	00:00:05	hh:mm:ss
Application parameters	Close valve when pump is shutdown	<input type="radio"/> No <input checked="" type="radio"/> Yes	
Channel function	Activate manual pump overdrive via group object	<input type="radio"/> No <input checked="" type="radio"/> Yes	
Monitoring and safety	Return from manual pump control to automatic mode	<input type="radio"/> Via group object <input checked="" type="radio"/> Via group object or automatic	
Pump	Reset time	00:05:00	hh:mm:ss
a: Supply flow temperature	Monitor pump status	<input type="radio"/> Deactivated <input checked="" type="radio"/> Via physical device input	
b: Return flow temperature	Note: Configuration in parameter window 'c: Binary input'		
c: Binary input	Monitor pump error	Via physical device input	
d: Binary input	Note: Configuration in parameter window 'd: Binary input'		
e: Binary input	Monitor pump repair switch	Via physical device input	
Valve output B/C	Note: Configuration in parameter window 'e: Binary input'		
- Temperature controller	Send status value	After a change	
Heating			
+ Channel B			

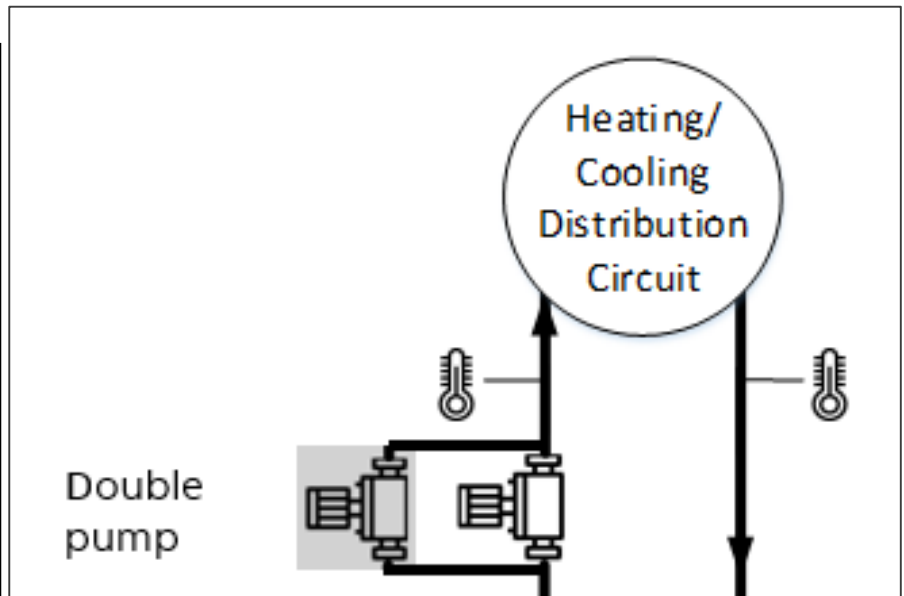
Heating Cooling Circuit Controller HCC/S 2.x.x.1

Function

Double Pump

Two pumps per Heating/Cooling Circuit (Redundancy)

- Operation via relay contacts in HCC/S
- Channel 1 main pump, channel 2 backup pump or vice versa
- Change of running pump in case of failure takes place automatically
- Weekly change between both pumps possible
- Manual change via KNX telegram anytime possible



Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Double Pump

Two pumps per Heating/Cooling Circuit results in only one circuit to be controlled, some parameters for channel B disappear

Options to use the pumps:

- Pump A is main pump, pump B backup pump
- Pump B is main pump, pump A backup pump
- Weekly change
 - Changeover point: Day and time when change takes place
 - Changeover time: Duration where both pumps are off. Time can be also negative to have an overlapping pump operation
- 3 binary inputs still available for status, failure and repair mode of pump 2

1.1.1 HCC/S2.2.2.1 heating/cooling contr.,3-point>manual operation,2-fold,MDRC > General

General	Sending and switching delay after bus voltage recovery	2 s
+ Manual operation	State after sending and switching delay has elapsed	<input checked="" type="radio"/> Last value received <input type="radio"/> Ignore received values
- Channel A	Limit number of telegrams	<input checked="" type="radio"/> No <input type="radio"/> Yes
Application parameters	Enable group object "In operation", 1 bit	<input checked="" type="radio"/> No <input type="radio"/> Yes
Channel function	Access to i-bus Tool	Full access
Monitoring and safety	Channel bundling for double pumps	<input type="radio"/> No <input checked="" type="radio"/> Yes
Pump		

Operating mode pump channel A	Main pump
Operating mode pump channel B	Backup pump

Operating mode pump channel A	Change weekly
Operating mode pump channel B	Change weekly
Changeover point weekday	Monday d
Changeover point time	1 h
Changeover time	2 s

Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Inputs

5 inputs

- Input a: analogue, fixed for flow temperature, necessary as actual value for control
- Input b: analogue, fixed for return flow temperature, for information only
- Input c: binary, for pump status detection or free input
- Input d: binary, for pump failure detection or free input
- Input e: binary, for pump repair mode detection or free input

Powerful heating/cooling control

1.1.1 HCC/S2.2.2.1 heating/cooling contr.,3-point,manual operation,2-fold,MDRC > Channel A > a: Supply flow temperature

General	Use temperature input	<input checked="" type="radio"/> Activated <input type="radio"/> External temperature input via KNX
+ Manual operation	Temperature sensor type	PT1000 [-30...+110°C]
- Channel A	Temperature offset	0 K
Application parameters	Cable error compensation	None
Channel function	Filter	Inactive
Monitoring and safety	Send temperature value	After a change
Pump	Value is sent from a change of	1 K
a: Supply flow temperature		
b: Return flow temperature		
c: Binary input		
d: Binary input		
e: Binary input		

Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Inputs

Analogue inputs for temperature

- PT1000, PT100, NTC, KTY, NI 1000
- Temperature offset
- Cable error compensation
- Filter: average value from measuring period 30, 60, 120 s

1.1.1 HCC/S2.2.2.1 heating/cooling contr.,3-point>manual operation,2-fold,MDRC > Channel A > a: Supply flow temperature

General	Use temperature input	<input checked="" type="radio"/> Activated <input type="radio"/> External temperature input via KNX
+ Manual operation	Temperature sensor type	PT1000 [-30...+110°C]
- Channel A	Temperature offset	0 K
Application parameters	Cable error compensation	None
Channel function	Filter	Inactive
Monitoring and safety	Send temperature value	After a change
Pump	Value is sent from a change of	1 K

a: Supply flow temperature

Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Inputs

Binary signal inputs with classical functions

- On/off/toggle
- Long/short operation
- Enable/disable

1.1.1 HCC/S2.2.2.1 heating/cooling contr.,3-point>manual operation,2-fold,MDRC > Channel A > c: Binary input		
General	Use input	<input type="radio"/> Deactivated <input checked="" type="radio"/> As binary signal input
+ Manual operation	Maximum dead time: 200 ms	
- Channel A	Distinction between long and short operation	<input checked="" type="radio"/> No <input type="radio"/> Yes
Application parameters	Open contacts: Event 0 Close contacts: event 1	
Channel function	Activate minimum signal duration	<input checked="" type="radio"/> No <input type="radio"/> Yes
Monitoring and safety	1-bit group object "Disable input"	<input checked="" type="radio"/> No <input type="radio"/> Yes
Pump	Reaction on event 0	Off
a: Supply flow temperature	Reaction on event 1	On
b: Return flow temperature	Send status value	<input checked="" type="radio"/> After a change <input type="radio"/> On change and cyclically
c: Binary input	Scan input after download, ETS reset and bus voltage recovery	<input type="radio"/> No <input checked="" type="radio"/> Yes
d: Binary input		

Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Valves

3-point motor valve drives

- Reversing time: Time the drive is stopped in case of change from open to close or vice versa
- Switch on time: Time drive needs from open to close or vice versa
- Automatic adjustment: After a certain number of small positionings drive runs to the end positions (only 3-point valve)
- Manual override via telegram, e.g. in case of a system fault
- Valve purge: enable/disable via telegram, cyclically in weeks, can be reset in case of exceeding a certain control value

1.1.1 HCC/S2.2.2.1 heating/cooling contr.,3-point,manual operation,2-fold,MDRC > Channel A > Valve output B/C

General	Valve output	Motor-driven (3-point)
+ Manual operation	Output B is used for the 'Open' signal, output C for the 'Close' signal	
- Channel A	Reversing time	500 ms
Application parameters	Switch on time for valve drive from 0 to 100%	120 s
Channel function	Automatic adjustment of valve drive	<input checked="" type="radio"/> No <input type="radio"/> Yes
Monitoring and safety	Send status values	After a change or on request
Pump	Enable manual valve override	<input checked="" type="radio"/> No <input type="radio"/> Yes
a: Supply flow temperature	Valve purge	Automatic or triggered by object
b: Return flow temperature	Purge cycle in weeks	4
c: Binary input	Reset purge cycle from control value greater than or equal to	99 %
d: Binary input	Send group object "Status Valve purge"	No, update only
e: Binary input		
Valve output B/C		

Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Valves

0-10 V valve drives

- Voltage Range:
 - 0-10V, 1-10V, 2-10V,10-0V
- Valve drive opening/closing time
- Manual override via telegram, e.g. in case of a system fault
- Valve purge: enable/disable via telegram, cyclically in weeks, can be reset in case of exceeding a certain control value

1.1.1 HCC/S2.1.2.1 heating/cooling circuit controller,0-10V,man. op.,2-fold,MDRC > Channel A > Valve output B (0-10V)

General	Valve output	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
+ Manual operation	Voltage range valve control value	0 - 10 V
- Channel A	Valve drive opening/closing time	180 s
Application parameters	Send status values	After a change or on request
Channel function	Enable manual valve override	<input type="radio"/> No <input checked="" type="radio"/> Yes
Monitoring and safety	Valve purge	Automatic or triggered by object
Pump	Purge cycle in weeks	4
a: Supply flow temperature	Reset purge cycle from control value greater than or equal to	99 %
b: Return flow temperature	Send group object "Status Valve purge"	No, update only
c: Binary input		

Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Controller

For the mixing valves independent PI controller for heating/cooling

- P- and I-component adjustable
- Min./Max. temperature
- Min./Max. control value
- Safety shut down
 - the controller's control value can be set to 0 on reaching a parameterized temperature. In this way, exceeding (heating) or dropping below (cooling) of the parametrized temperature can be prevented
 - I-value of controller can be frozen or reset in this case

1.1.1 HCC/S2.1.2.1 heating/cooling circuit controller, 0-10V, man. op., 2-fold, MDRC > Channel A > Temperature controller

General	Type of heating control value	PI continuous (0...100%)
+ Manual operation	xP-proportion	60 K
	I-proportion	60 s
- Channel A	Permissible temperature band lower limit	20 °C
	Permissible temperature band upper limit	80 °C
Application parameters	Extended settings	<input type="radio"/> No <input checked="" type="radio"/> Yes
Channel function	Control value difference for sending control value	5 %
Monitoring and safety	Send control value cyclically (0 = cyclical sending disabled)	15 Min
Pump	Max. control value	100 %
a: Supply flow temperature	Min. control value (basic load)	0 %
b: Return flow temperature	Enable safety shutdown	<input type="radio"/> No <input checked="" type="radio"/> Yes
c: Binary input	Safety shutdown temperature	80 °C
d: Binary input	Temperature hysteresis safety shutdown	1 K
e: Binary input	I-proportion with safety shutdown	<input checked="" type="radio"/> Freeze <input type="radio"/> Reset
Valve output B (0-10V)	Temperature input for temperature limit sensor	<input checked="" type="radio"/> Via group object <input type="radio"/> Via physical device input
- Temperature controller		
Heating		

Heating Cooling Circuit Controller HCC/S 2.x.x.1

ETS

Controller

Control Parameter are very simple with following options:

- High accuracy: fast reaction, more control values sent out, more valve operations, PI-controller fixed
- Medium accuracy: reaction time and number of control values and valve actions are balanced, PI-controller fixed
- Low accuracy: slow reaction and higher tolerance, less valve operations, PI-controller fixed
- Free configuration: PI-Controller freely adjustable

1.1.1 HCC/S2.2.2.1 heating/cooling contr.,3-point>manual operation,2-fold,MDRC > Channel A > Application parameters

General	Device function <input checked="" type="radio"/> Controller <input type="radio"/> Actuator device
Manual operation	Device is used with internal controller
Manual operation	Caution! A change to the parameterization in this section will result in an ETS reset after download
Channel A	Controller setting heating <div>Medium temperature accuracy / medium number of valve movements</div>
Application parameters	Controller setting cooling <div>Deactivated Free configuration Reduced temperature accuracy / few valve movements Medium temperature accuracy / medium number of valve movements <input checked="" type="radio"/> High temperature accuracy / many valve movements</div>
Channel function	Caution! A change to the parameterization in t
Monitoring and safety	Actuate heating via
Pump	
a: Supply flow temperature	

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 1

What can be done with ABB i-bus Tool together with HCC/S?

- A** Change parameter parametrized in the ETS application
- B** Overwrite values for valve position and setpoint
- C** Operation of pump

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 1

What can be done with ABB i-bus Tool together with HCC/S?

- ☐ A Change parameter parametrized in the ETS application
- ☒ B Overwrite values for valve position and setpoint
- ☐ C Operation of pump

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 2

The integrated controller of HCC/S has ...

- A** Temperature limitation, e.g. of floor heating
- B** freely programmable PI-Controller
- C** a simple pre-configuration for different accuracy levels

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 2

The integrated controller of HCC/S has ...

- A** Temperature limitation, e.g. of floor heating
- B** freely programmable PI-Controller
- C** a simple pre-configuration for different accuracy levels

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 3

Inputs of HCC/S are made for ...

- ☒ **A** ... connecting binary signals
- ☐ **B** ... connecting temperature sensor of flow temperature
- ☐ **C** ... connecting the Room Control Unit SAR/A

Heating Cooling Circuit Controller HCC/S 2.x.x.1

Which answer is correct?

Question 3

Inputs of HCC/S are made for ...

A

... connecting binary signals

B

... connecting temperature sensor of flow temperature

C

... connecting the Room Control Unit SAR/A

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ABB