

BUILDING AUTOMATION COMPETENCE CENTER EUROPE

ClimaECO – Heating-/Cooling Circuit Controller HCC/S

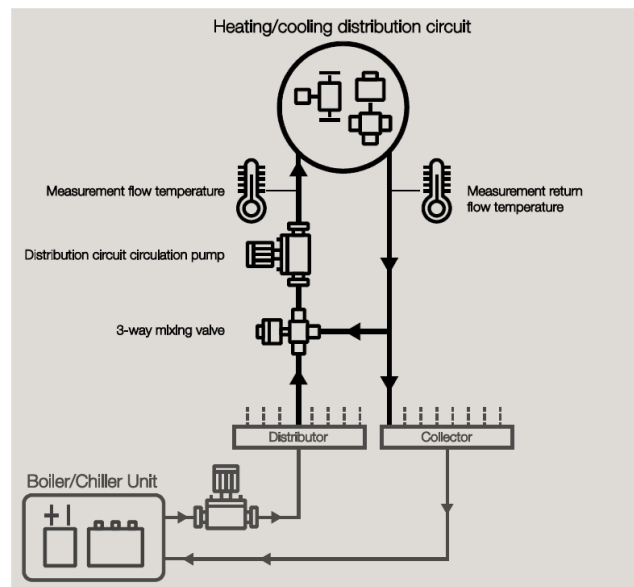
Boards:

Outputs: Capital letters

Inputs: small letters

Exercise:

With the Heating/Cooling Circuit Controller HCC/S 2.1.2.1 (0-10V), the control of a heating circuit should be created.



Parameterize the following functions for channel A in the ETS (Block Application parameters):

3.2.9 Training HCC/S2.1.2.1 heating/cooling circuit cont > 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
- Channel A	Caution! A change to the parameterization in this section will result in an ETS reset after download
Application parameters	Controller setting heating High temperature accuracy / many valve movements
Channel function	Controller setting cooling High temperature accuracy / many valve movements
Monitoring and safety	Caution! A change to the parameterization in this section will result in an ETS reset after download
Pump	Actuate heating via <input checked="" type="radio"/> Device output valve <input type="radio"/> Group object
a: Supply flow temperature	Actuate cooling via <input checked="" type="radio"/> Device output valve <input type="radio"/> Group object
b: Return flow temperature	

Activate three inputs for pump monitoring:

3.2.9 Training HCC/S2.1.2.1 heating/cooling circuit cont > 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 checked="" type="radio"/> No <input type="radio"/> Yes
Monitoring and safety	
Pump	Monitor pump status <input type="radio"/> Deactivated <input checked="" type="radio"/> Via physical device input Note: Configuration in parameter window 'c: Binary input'
a: Supply flow temperature	Monitor pump error Via physical device input Note: Configuration in parameter window 'd: Binary input'
b: Return flow temperature	Monitor pump repair switch Via physical device input Note: Configuration in parameter window 'e: Binary input'
c: Binary input	
d: Binary input	
e: Binary input	

ABB i-bus tool

Start the ABB i-bus tool and connect to the HCC/S via the physical address.

- Adjust the setpoint temperature of the heating circuit (60 degrees Celsius) via the i-bus tool
- Change the flow temperature via the potentiometer, Flow Temperature '

How does the control value for the mixing valve change if the flow temperature is higher or lower than the setpoint temperature?

If the difference between setpoint and actual value remains the same, the control value increases continuously. Why?

- Change the return temperature. Something changes at the controller, e.g. the control value?

The pump should switch on when control value exceeds 10% and switch off if it falls below 5%.

- Run-on time is 5s after switch-off command.
- Simulate and test the function in the i-bus tool.

Check this function:

Application parameters	Close valve when pump is shutdown <input type="radio"/> No <input checked="" type="radio"/> Yes
Channel function	
Monitoring and safety	
Pump	

Parameterize the safety shutdown. At a value of 30 degrees Celsius (e.g., soil temperature of a floor heating system), the heating circuit should be closed. Simulate the temperature via a TRITON button (horizontal rockers) with the value transmitter function.

d: Binary input	Enable safety shutdown <input type="radio"/> No <input checked="" type="radio"/> Yes
e: Binary input	Safety shutdown temperature <input type="text" value="80"/> °C
Valve output B (0-10V)	Temperature hysteresis safety shutdown <input type="text" value="1"/> K
Temperature controller	I-proportion with safety shutdown <input checked="" type="radio"/> Freeze <input type="radio"/> Reset
Heating	Temperature input for temperature limit sensor <input checked="" type="radio"/> Via group object <input type="radio"/> Via physical device input
Cooling	

Assignment of group addresses in HCC/S:

96	Temperature input safety shutdown heating	Channel A - Controller	2 bytes
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Parameterize a double pump with switch over object: channel A main pump, channel B backup pump, changeover time 2s.

3.2.9 Training HCC/S2.1.2.1 heating/cooling circuit cont > General

General

+ Manual operation

- Channel A

Application parameters

Channel function

Monitoring and safety

Pump

Sending and switching delay after bus voltage recovery

2

s

State after sending and switching delay has elapsed

☒ Last value received
☐ Ignore received values

Limit number of telegrams

☒ No
☐ Yes

Enable group object "In operation", 1 bit

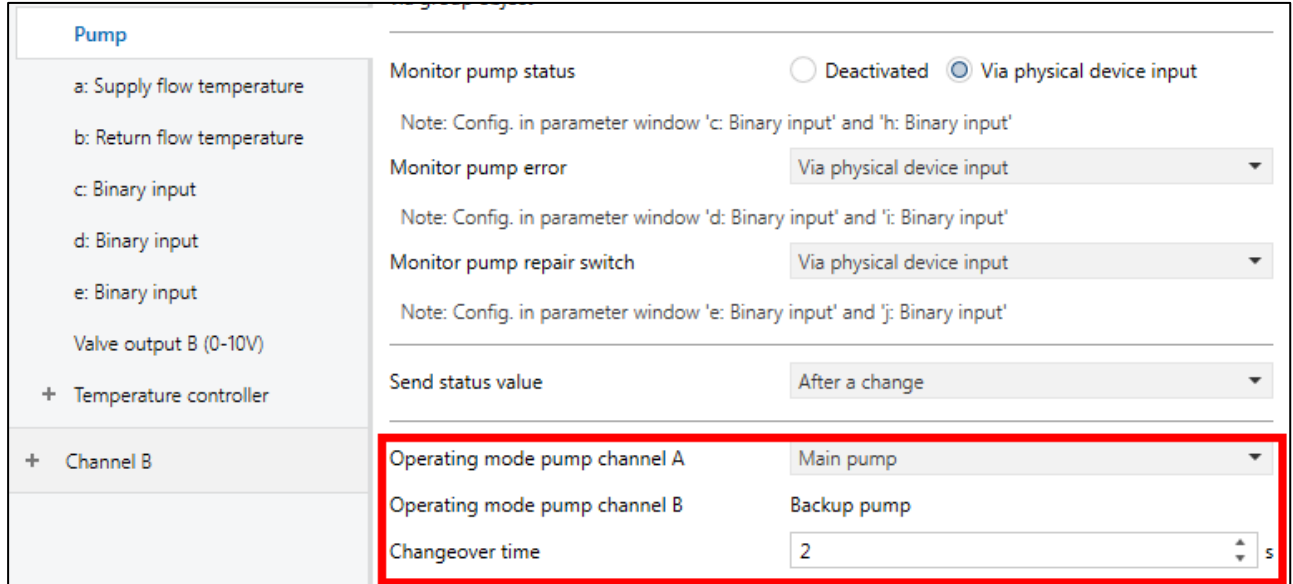
☒ No
☐ Yes

Access to i-bus Tool

Full access

Channel bundling for double pumps

☐ No
☒ Yes



Switch between the pumps via KNX push button:

Group object changeover pumps:

36	Master/slave changeover	Channel A - Pump	1 bit
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Between the two pumps can be switched with a 1-bit telegram with 0 or 1 (trigger object)

The display of the respective status of pump A or pump B can be made via the object 'Status pump master / slave ...',

32	Status pump master/slave (1=Master; 0=Slave)	Channel A - Pump	1 bit
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Indication via group monitor in ETS possible.