 

Module 3

EXERCISE: Alarm

# : 60 min

Objective:

Exercise 1. Binary input, fire

Whenever the fire contact is open the binary input object generates an alarm, and the whole unit is turned off accordingly. This alarm is not self-released.

Exercise 2. Analog input, supply temperature

When the measured temperature value is out of high- and low-limit range, an OffNormal event is triggered which generates an alarm. Reliability issue such as sensor not connected, triggered Fault event and also generates an alarm. The alarm is self-released.

Exercise 3. Binary output, supply and extract fan

When the fan feedback signal is not same as fan command output, an alarm is generated and the whole unit is turned off. This alarm is not self-released.

Use the data points from the previous created function blocks (module 2).

# Task:

Exercise 1. Binary input, fire

1. Add a StatusEval object and connect it to the binary input object and the   
   output to OffNormal   
   - It translates the status of the function block.   
    Set the value to “0” (any status value will be evaluated).
2. Go to the automation object and check the AlarmConfig properties of the Function block “Fire” and keep the setting.
3. Self-release as enabled for the moment. (In step 5, we change this behaviour)
4. Save, generate code and download to the controller.
5. Switch to Online mode and trigger an alarm via “Force mark” as it will switch of the operation AHU
6. Observe the alarm in the SCOPE tool 🡪 aoHVAC (aoUnit) 🡪 Hierarchy 🡪 FLT state
7. Remove the alarm and the operation mode will change in normal operation
8. In the SCOPE tool, change the event config to self-release (untick the box) as it should be.
9. Switch to Online mode and trigger again an alarm via “Force mark” as it will switch of the operation AHU
10. Remove the alarm and the operation mode will remain not operation.
11. As next, acknowledge the alarm in SCOPE as will bring back the AHU in normal operation.
12. Get familiar with the Target browser in SCOPE and check the alarm history.

**Exercise 2. Analog input, supply temperature**

1. Go to the automation object and check the AlarmConfig properties of the Function block “Tsu” as needed.
2. Optional the High and the low limit settings could be changed.
3. If some values have been changed, compile and download.
4. Switch to Online mode and check the values, such as temperature and reliability.
5. Change the temperature to 65°C to exceed the high limit value
6. Check the “HighLimitActive” value in the SCOPE browser.
7. In the online mode, change the temperature back to 20°C.
8. The alarm is released automatically as it is programmed as “self-release”
9. Back to the online mode, simulate a reliability issue (some hardware defect)
10. Check again in the SCOPE tool the, as the input object will be in fault state and triggering an alarm.
11. Remove the reliability issue as the system will get back to normal operation.

Exercise 3. Binary output, supply and extract fan

If the Feedback and the Tracking value of the binary output are not matching, an alarm will be triggered

1. Go to the automation object “BinaryOutput” and check the AlarmConfig properties of the Function block “Supply fan” and “Extract fan” as needed.
2. Optional the “AlarmTimeDelay can be changed. (e.g. 10 seconds)
3. Go to the automation object “BinaryInput” and check the AlarmConfig properties of the Function block “Supply fan” and “Extract fan” as needed.
4. If some values have been changed, compile and download.
5. Switch to Online mode and check the binary output value as it should be running.
6. In the SCOPE Operating menu switch off the plant, as you will see in online mode the binary output is off.
7. Now, simulate an interruption of the feedback signal.   
   - If it stays less than 10 secondes, the AHU will run as normal.   
   - If the interruption is longer than 10 seconds, the Fan alarm is triggered, which will   
    shut off the AHU. And then remove the event.
8. As it is configured as not self-release, the alarm must be acknowledged before going to normal operation again.
9. Check the alarm history in SCOPE tool.