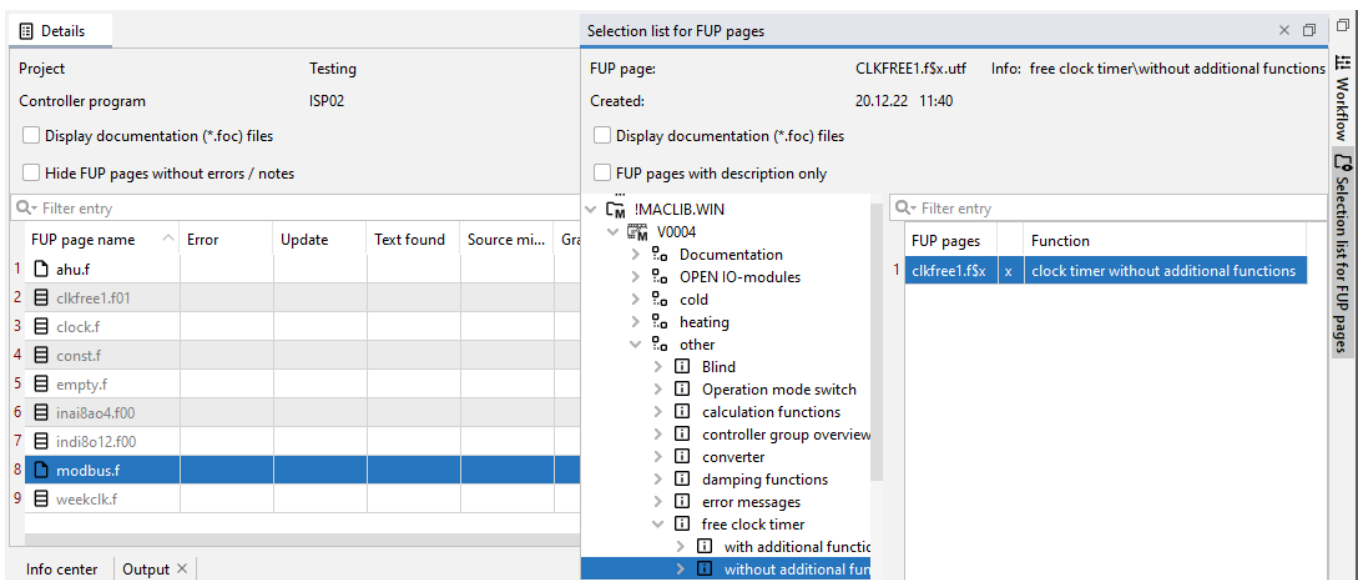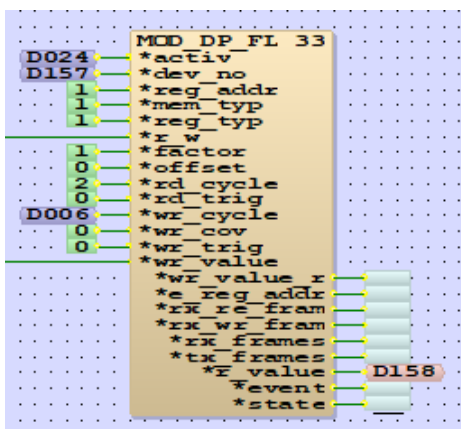# TT230701 – OFXL - Modbus Module Auto Control

1. In this document, we will show you how to control the on/off of the Regin RCF room controller automatically by time schedule via the Modbus module. You can refer to TT230503 on how to integrate this room controller using the new Modbus module.

2. First, we add the free clock timer macro (clkfree1.f$x) to your project.

3. Now add a new "MOD_DP_FL" module, like below.
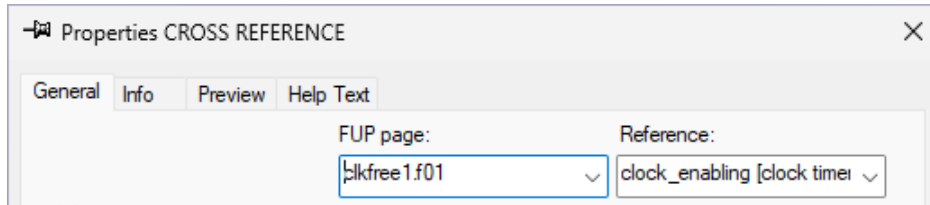

4. To turn on and turn off the room controller, we use the "Coil" with Modbus register "RC_Setp_L.RegioShutDown" of address "2" (which is 1 in our controller). Set it to 1 to turn it off (shutdown mode), and set it to 0 to turn it on.
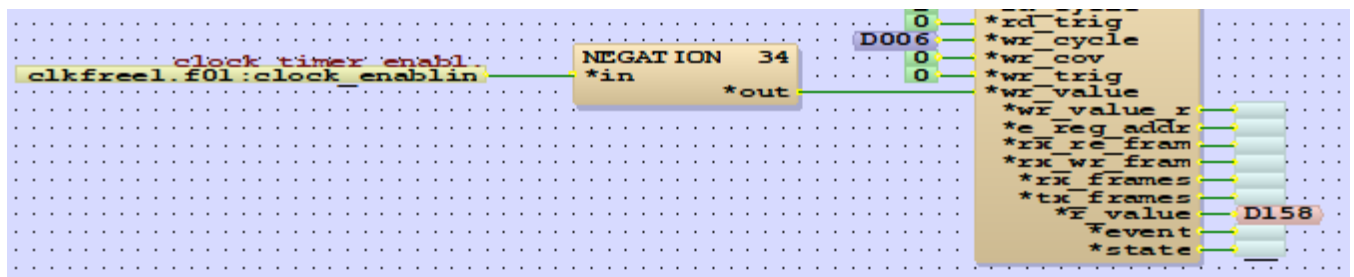
Coil status register

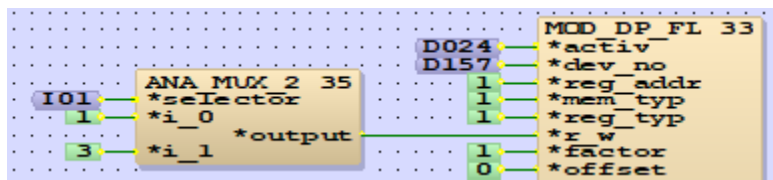| Name of signal	Type	Modbus address	Default value	Description
Not used in this model	L,1	1	0	
RC_Setp_L.RegioShutDown	L,1	2	0	Puts the unit in Shutdown mode.

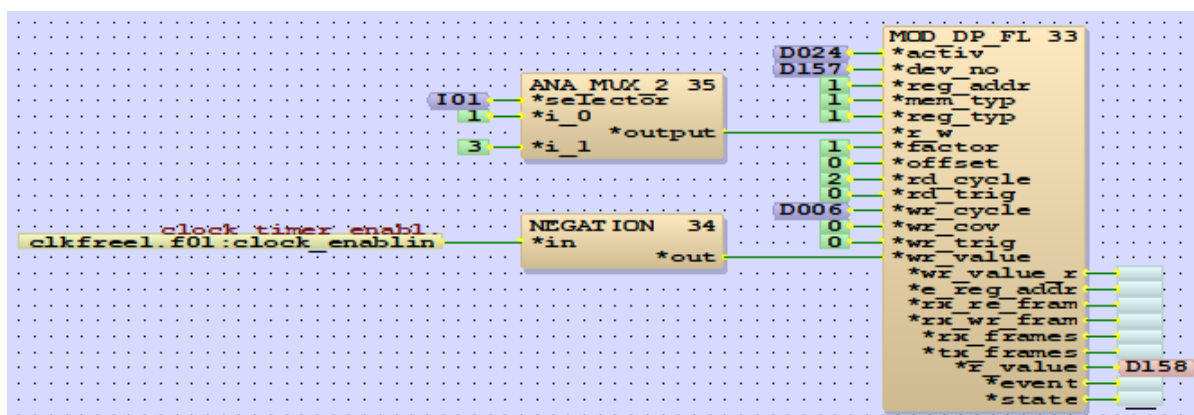5. Add a cross reference and link it to clock timer macro.

6. Connect it to a "NEGATION" module, and then to the "wr_value" input.

7. To enable/disable the auto control of the time schedule, we can set the "r_w" to 1 (read only) or to 3 (read/write). Setting it to 1 will disable the time schedule control, as "write" is not possible. Now user can turn it on/off directly from the thermostat.

8. Here is the complete program. The "wr_cycle" is link to an "Input" so you can change it online. We set it to 0 by default, meaning that the command will only send once to the room controller when the time schedule is changed.

9. This allows the user to turn it on/off freely from the thermostat. If you change it to any value other then 0 (e.g. 600), then the controller will override the user change every 10 minutes. This means, for example, during night time if the user turn it on manually, the controller will turn it off again within 10 minutes.
10. This is the HTML page and the example default values.

Modbus RCF-230C

```
Tuesday, 30.05.2023, 14:45
----------------------------
Modbus RCF-230C
----------------------------
Active                    (0)      Active                    (0)      --------------------------
Device No.        iiiii           Device No.        iiiii           Active                    (1)
                                                                     Device No.             2000
Unit State       -ffff,f          Power            -ffff,f
Control State    -ffff,f          Write cycle       iiiii           Power                   0,0
Fan Speed        -ffff,f
Room Temp        -ffff,f          Enable Schedule           (0)      Write cycle                0

Fan Select       -ffff,f                                            Enable Schedule           (0)
Remote State     -ffff,f
SP Offset        -ffff,f
Basic SP         -ffff,f
```

11. Now add the graphic for the time schedule control to the bottom of the "Modbus RCF-230C" graphic page.

C:\Users\DEOSHK01\AppData\Local\DEOS\OPEN FXL\4\workspace\prj\Testing\ISP02\modbus.f.utf – FUP Graphic Editor (4)

File   Edit   Element   View   Extras   Help

Zoom 100%

Active		Active	
Device No.	-####	Address	-####
Read/Write	Read	Point Type	Coil
		Data Type	UI
Unit State	Off	Read/Write	Read
Control State	Off	Factor	-####.##
Fan Speed	Off	Offset	-####.##
Room Temperature	-##.#	Read Cycle	-####
Fan Select	Off	Read Trigger	
Remote State	Off	Write Cycle	-####
Setpoint Offset	-##.#	Write COV	-####.##
Basic Setpoint	-##.#	Write Trigger	
		Value	-##########.##
		Status	OK
Schedule	Disable	operation mode	OFF
Write Cycle	-####	time program	OFF

12. Create and load the controller to test the new program.

▼ 🗔 01: DCS.Open
  📄 AHU
  🖼 AHU
  📄 Events
  📄 Modbus Debug
  📄 Modbus Device
  📄 Modbus FL 1
  🖼 Modbus FL 1
  📄 Modbus FL 2
  🖼 Modbus FL 2
  📄 Modbus License
  📄 Modbus Master
  📄 Modbus Multiple
  🖼 Modbus Multiple
  📄 Modbus RCF-230C
  🖼 Modbus RCF-230C

Active	✔	Active	☐
Device No.	2000	Address	1
Read/Write	Read/Write	Point Type	Coil
		Data Type	UI
Unit State	Comfort	Read/Write	Read
Control State	Cooling	Factor	1.00
Fan Speed	Speed 3	Offset	0.00
Room Temperature	31.7	Read Cycle	2
Fan Select	Auto	Read Trigger	
Remote State	Comfort	Write Cycle	0
Setpoint Offset	3.0	Write COV	0.10
Basic Setpoint	24.0	Write Trigger	
		Value	1.00
		Status	Modbus data point inactive
Schedule	Enable	operation mode	AUTO
Write Cycle	10	time program	ON

13. Click on "time program" to open up the below window. Set it to "AUTO", enable "Weekly Clock A" and click the "A" button to set the on/off time. Now the room controller should turn on/off according to the schedule.

14. Disable the schedule like below, and then user can turn it on/off freely from the thermostat.

Active	✔
Device No.	2000
Read/Write	Read/Write
Unit State	Off
Control State	Heating
Fan Speed	Off
Room Temperature	31.6
Fan Select	Auto
Remote State	Comfort
Setpoint Offset	3.0
Basic Setpoint	24.0

Active	
Address	1
Point Type	Coil
Data Type	UI
Read/Write	Read
Factor	1.00
Offset	0.00
Read Cycle	2
Read Trigger	
Write Cycle	0
Write COV	0.10
Write Trigger	
Value	1.00

Status	Modbus data point inactive

Schedule	Disable
Write Cycle	Disable
	Enable

operation mode	AUTO ▼
time program	O N

15. Set it back to "Enable" and then set the "Write Cycle" to 10. The controller will then command the room controller every 10 seconds, overriding the user change from the thermostat.

Schedule	Enable
Write Cycle	10

operation mode	AUTO ▼
time program	O N

16. Set the "Write Cycle" to 0 allows both schedule control and user control from the thermostat.

Schedule	Enable
Write Cycle	0

operation mode	AUTO ▼
time program	O N