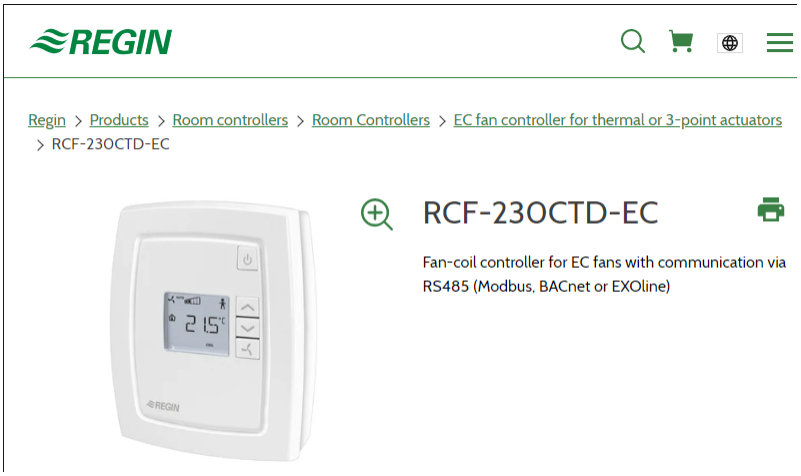
TT230504 – OFXL - Modbus Module Multiple Devices

1. In most of the projects, you will have many Modbus devices which are the same, and you need to setup the device's parameters for all of them. For example, we want to set the below room controller to cooling only (default is auto heating/cooling).

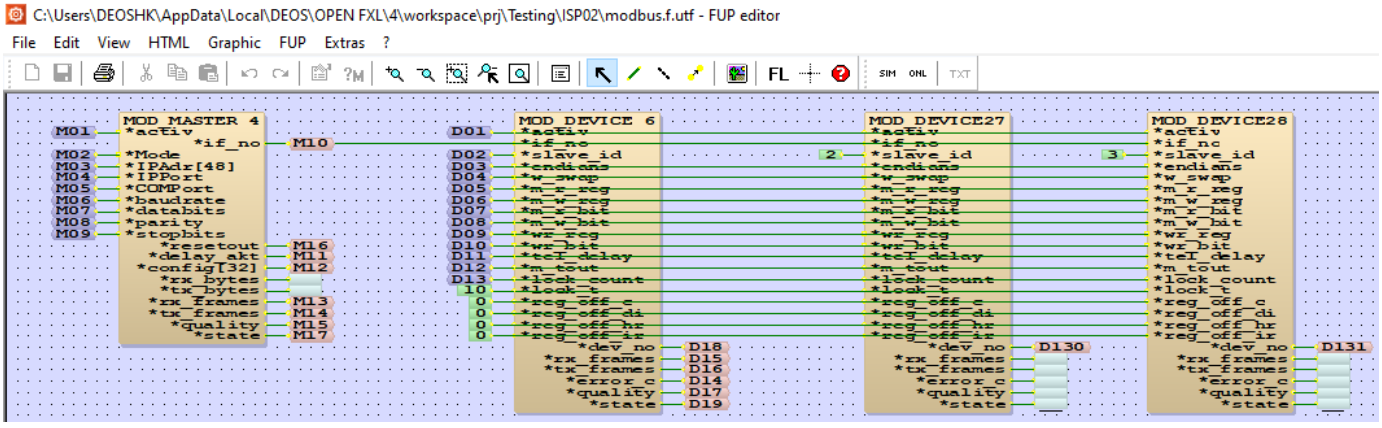


2. In this document, we will show you how to change all the devices settings easily with the new Modbus modules. In this case, we will need to change the Modbus holding register address 13 with a value of 1.

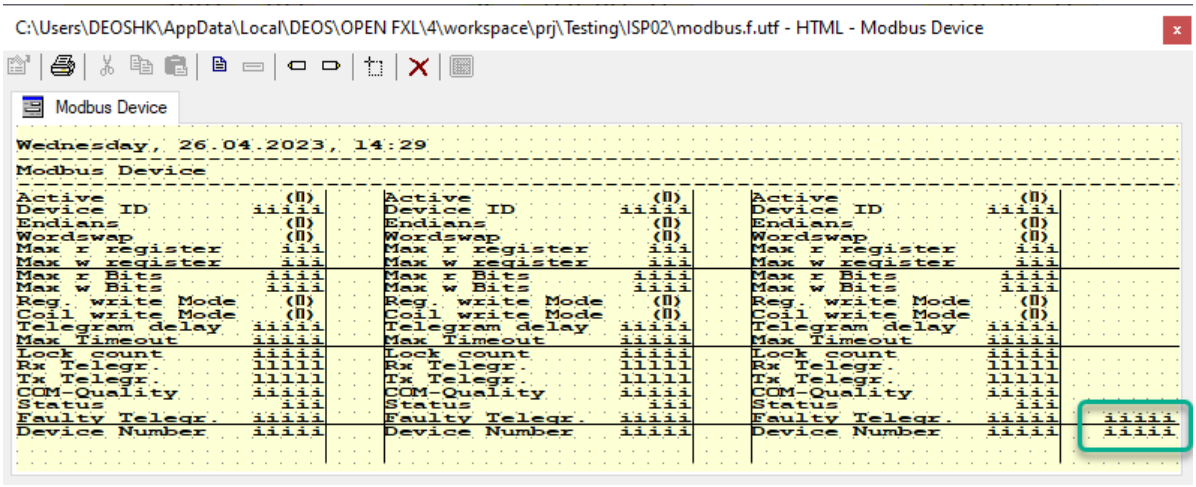
Holding register

Name of signal	Type	Modbus address	Default setting	Description
RC_Setp_X.RegioChangeOverSelect	X,3	13	RCFM-230Cxx = 0 RCF-230Cxx = 2	Manual/Auto Change-over (0=Heating, 1=Cooling, 2=Auto)

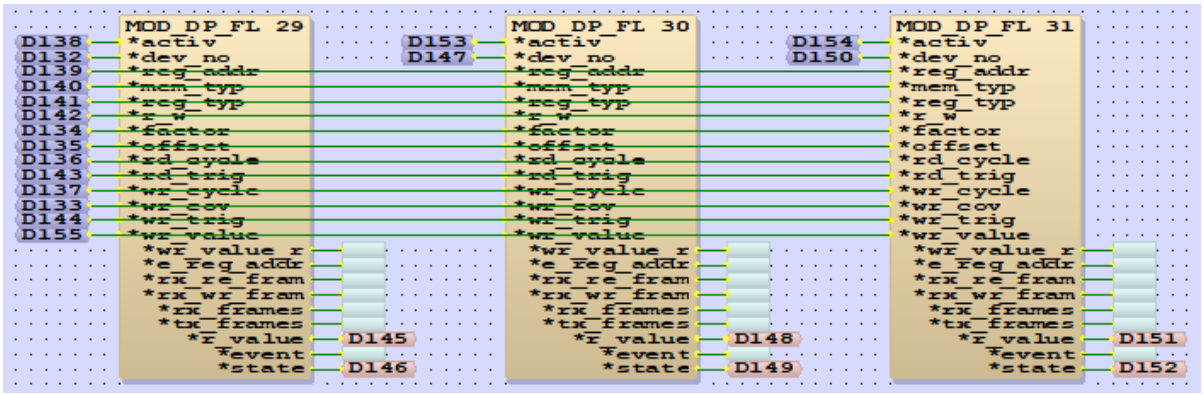
3. We continue from the last few TT regarding the new Modbus module. This time, we add 2 more Modbus devices to the 2nd Modbus master module.



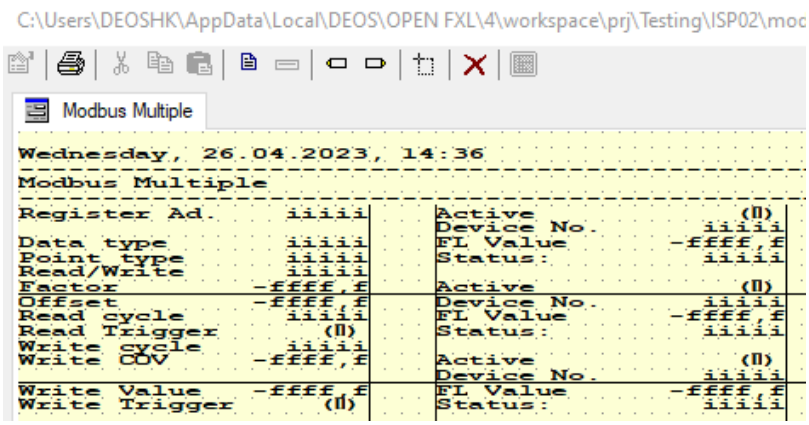
4. Since these Modbus devices are all the same, so the settings in the Modbus device module should also be the same. Therefore, we can just connect the "Input" together, except for the "slave_id". To make it simple for testing, we use "Constant" and set them to 2 and 3 respectively.
5. In the HTML page, we put the 2 "dev_no" to the bottom right corner. This is used to show the "dev_no" for these 2 new Modbus device modules.



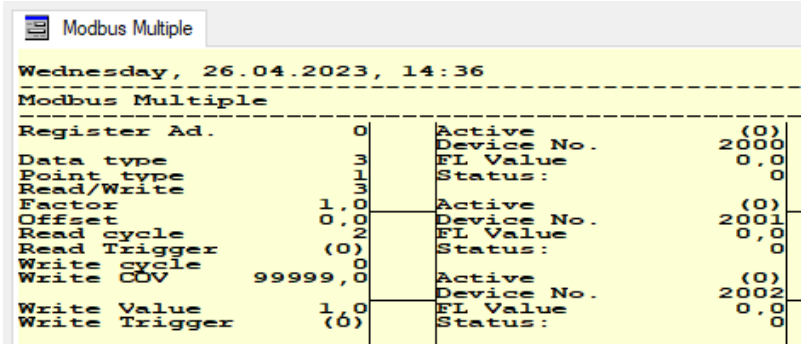
6. Now we add 3 “MOD_DP_FL” modules and connect them like below.



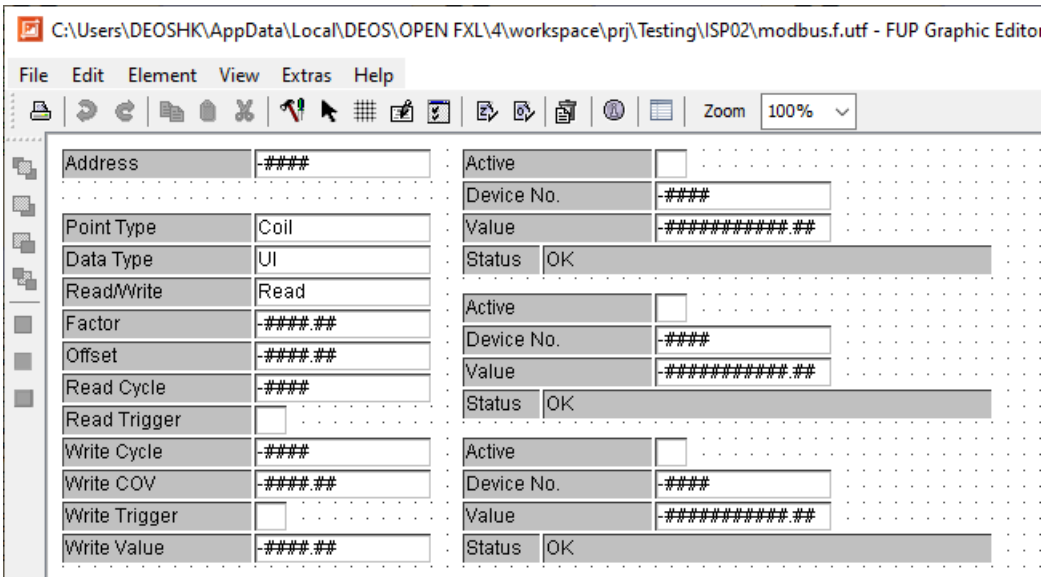
7. Set the HTML page like below.



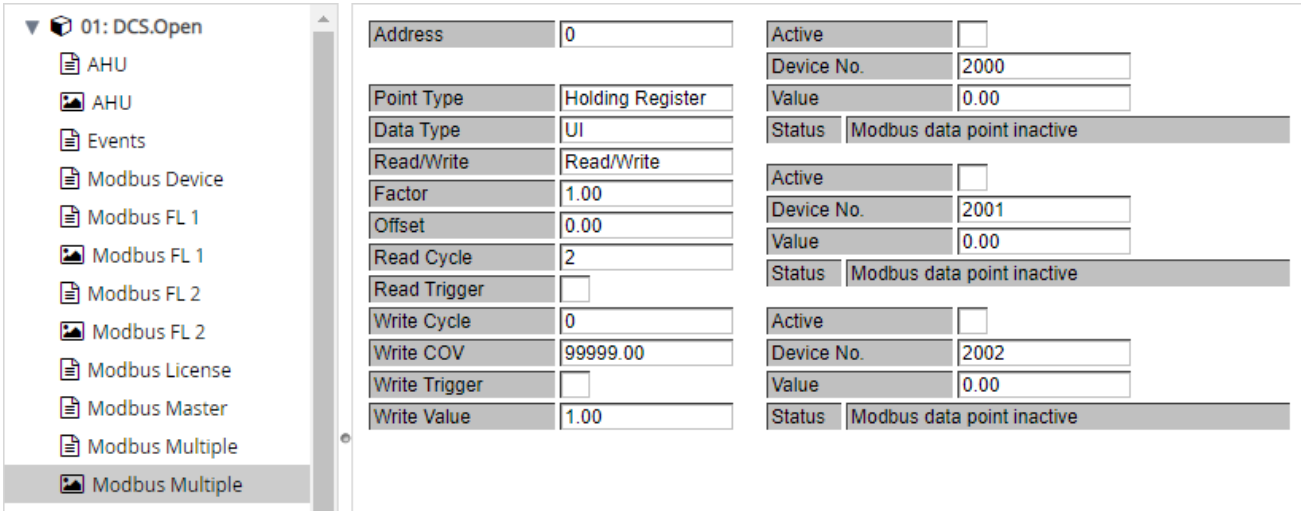
8. Here are the default settings we used in this example. We set “r_w” to 3 as we want to write to the register. Also, we want to write to the register only when we trigger it manually (via “wr_trigger”. So, we set “wr_cov” to a very high value, such that it won’t trigger the write automatically. We also don’t want to write to the registers accidentally, so we set “active” to 0 by default.



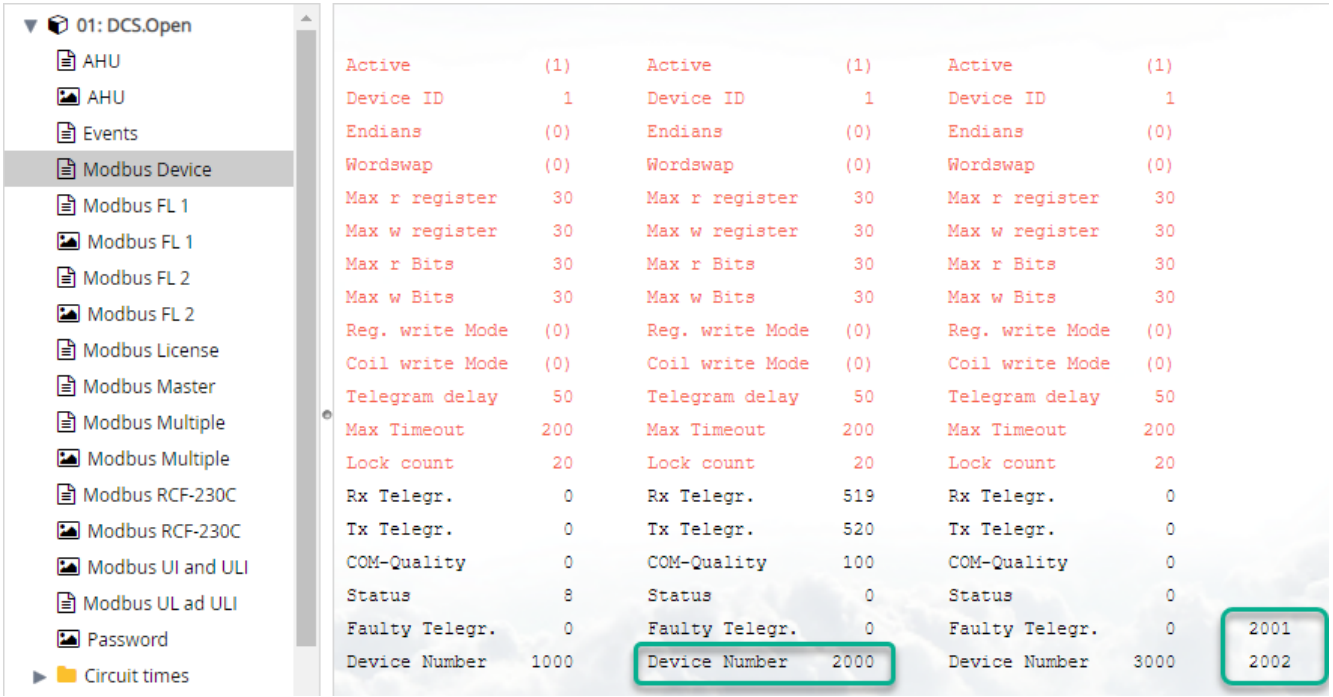
9. The graphic page is setup like this.



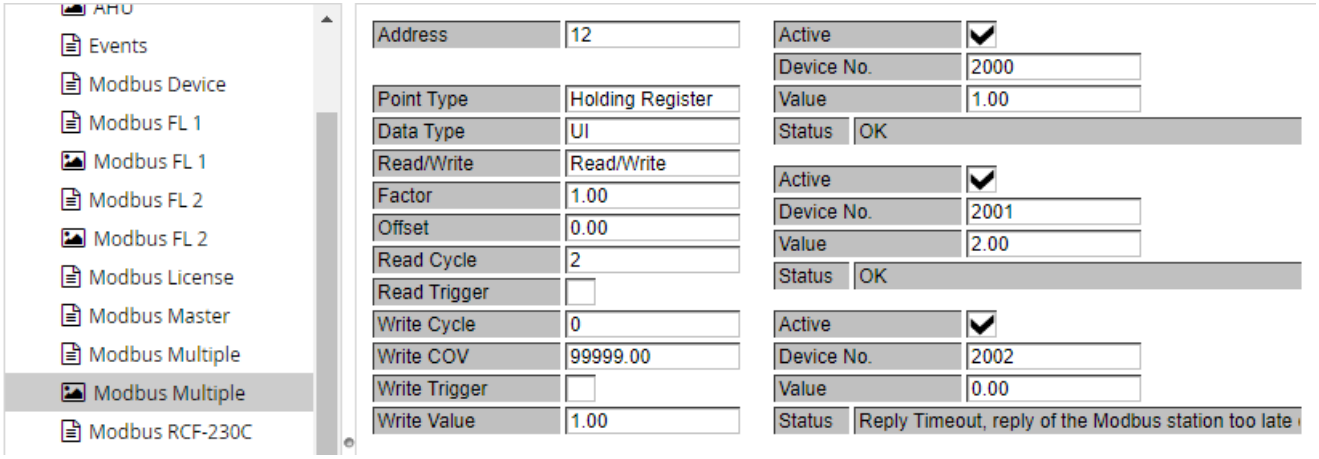
10. Create and load the controller. You should see like below in the “Modbus Multiple” graphic page. If not, then you may need to do a “preset” of the controller.



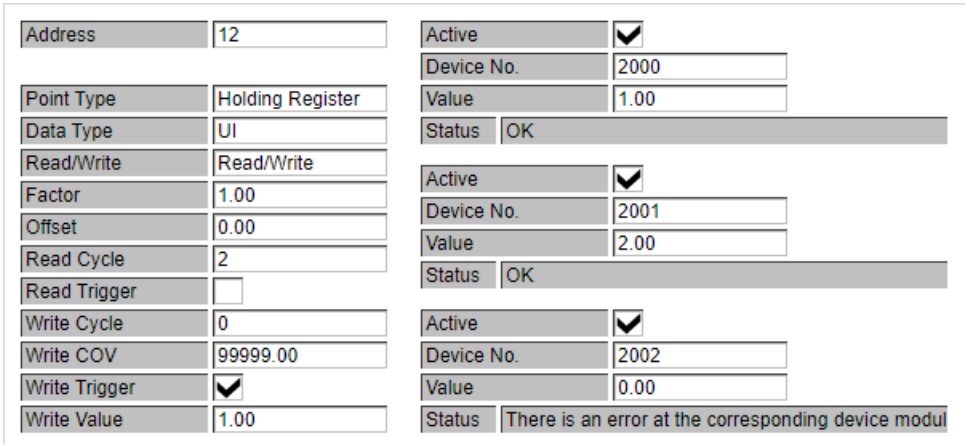
11. You can find the correct “Device No.” from the “Modbus Device” page.



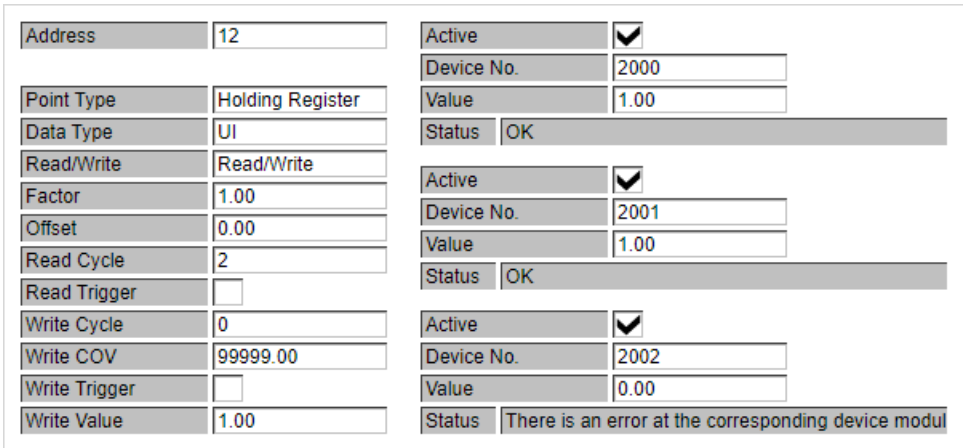
12. Check if the device no. are correct, set the address correctly (13 - 1 = 12), and then set the points to “Active”. You should now see the parameter in each room controller. In this example, device 1 and 2 have different values and device 3 is offline.



13. We want to set all of them to “Cooling”, so we set “Write Value” to 1 and then enable “Write Trigger”.



14. The controller will then write “1” to all the room controllers. After you see all “value” become 1, then you can disable “Write Trigger”. Now all room controllers are all in “Cooling” mode, except the one that are offline.



15. Since you can change the “Device No.” online, this means you can write to the room controllers on different channels (i.e. Modbus Master module) as well.
16. In this example, we change the “Device No.” of the 3rd device to 1000, which is connected through a Modbus RTU to IP Modbus router. In this example, the value in this room controller is 0 (i.e. heating).

Address	12	Active	☑
		Device No.	2000
Point Type	Holding Register	Value	1.00
Data Type	UI	Status	OK
Read/Write	Read/Write		
Factor	1.00	Active	☑
Offset	0.00	Device No.	2001
Read Cycle	2	Value	1.00
Read Trigger	☐	Status	OK
Write Cycle	0	Active	☑
Write COV	99999.00	Device No.	1000
Write Trigger	☐	Value	0.00
Write Value	1.00	Status	OK

17. Now, trigger the write again, and it will become 1 as well (i.e. cooling). Note: remember to disable the trigger after finish writing each time.

Address	12	Active	☑
		Device No.	2000
Point Type	Holding Register	Value	1.00
Data Type	UI	Status	OK
Read/Write	Read/Write		
Factor	1.00	Active	☑
Offset	0.00	Device No.	2001
Read Cycle	2	Value	1.00
Read Trigger	☐	Status	OK
Write Cycle	0	Active	☑
Write COV	99999.00	Device No.	1000
Write Trigger	☑	Value	1.00
Write Value	1.00	Status	OK

18. If you enter an incorrect “Device No.”, you will see the below message.

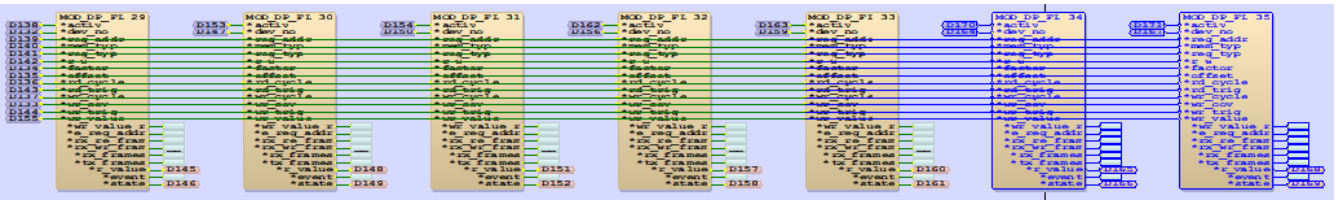
Active	☑
Device No.	1234
Value	1.00
Status	No associated DEVICE module

19. You can now change other parameters in the room controllers by changing the address (e.g. PID parameters). You can also change the parameters in other point type, e.g. “Coil”. Note: remember to set all the points to inactive if you’ve finished the setup, like below.

Address	16	Active	☐
		Device No.	2000
Point Type	Coil	Value	1.00
Data Type	UI	Status	Modbus data point inactive
Read/Write	Read/Write		
Factor	1.00	Active	☐
Offset	0.00	Device No.	2001
Read Cycle	2	Value	1.00
Read Trigger	☐	Status	Modbus data point inactive
Write Cycle	0	Active	☐
Write COV	99999.00	Device No.	1234
Write Trigger	☐	Value	1.00
Write Value	1.00	Status	No associated DEVICE module

20. You can also use this to do many other things. For example, you can check all the room temperatures, by setting the “Point Type” to “Input Register”, “Read/Write” to “Read”, “Address” to 10, and “Factor” to 0.1.

21. You can expand this to read/write as many room controllers as you like, by simply copying and pasting the modules, like below.



22. With this new Modbus modules, you can easily set all the required parameters in all room controllers at the same time. You don't need to set them up one by one using the keypad on the room controller, or using a 3rd party Modbus tool any more.