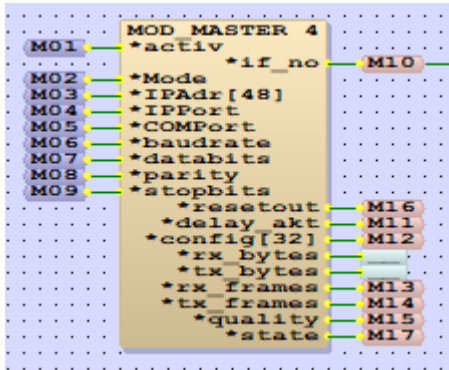


TT230501 – OFXL - Modbus Module Multiple Channels

1. In this document, we will show you how to create multiple channels, devices and points using the new Modbus module. First, we copy the “MOD_MASTER” and paste it 2 times.



2. The HTML page looks like this with 3 Channels (“MOD_MASTER” module).

C:\Users\DEOSHK\AppData\Local\DEOS\OPEN FXL\4\workspace\prj\Testing\ISP02\modbus.f.utf - HTML - Modbus Master

Modbus Master

Thursday, 06.04.2023, 13:41

Active Mode	(H)	Active Mode	(H)	Active Mode	(H)
(---Port)	(---)	(---Port)	(---)	(---Port)	(---)
IP-Port	iiiiii	IP-Port	iiiiii	IP-Port	iiiiii
COM-Port	iiiiii	COM-Port	iiiiii	COM-Port	iiiiii
Baudrate	iiiiii	Baudrate	iiiiii	Baudrate	iiiiii
Databits	iiiiii	Databits	iiiiii	Databits	iiiiii
Parity	iiiiii	Parity	iiiiii	Parity	iiiiii
Stopbits	iiiiii	Stopbits	iiiiii	Stopbits	iiiiii
Interface No.	iiiiii	Interface No.	iiiiii	Interface No.	iiiiii
Send Delay (ms)	iiiiii	Send Delay (ms)	iiiiii	Send Delay (ms)	iiiiii
Status	iii	Status	iii	Status	iii
COM-Quality (%)	iiiiii	COM-Quality (%)	iiiiii	COM-Quality (%)	iiiiii
Reset Output	iiiiii	Reset Output	iiiiii	Reset Output	iiiiii
(---Frames)	(---)	(---Frames)	(---)	(---Frames)	(---)
Rx Frames	11111	Rx Frames	11111	Rx Frames	11111
Tx Frames	11111	Tx Frames	11111	Tx Frames	11111

3. Now set the default value of “Mode” to 0 for the 2nd and 3rd modules. “0” here means it will be communicating using Modbus RTU (RS-485, COM2 or COM3).

Modbus Master

Thursday, 06.04.2023, 13:41

Modbus Master

Active Mode	(H)	Active Mode	(H)
(---Port)	(---)	(---Port)	(---)
IP-Port	iiiiii	IP-Port	iiiiii
COM-Port	iiiiii	COM-Port	iiiiii
Baudrate	iiiiii	Baudrate	iiiiii
Databits	iiiiii	Databits	iiiiii
Parity	iiiiii	Parity	iiiiii
Stopbits	iiiiii	Stopbits	iiiiii
Interface No.	iiiiii	Interface No.	iiiiii
Send Delay (ms)	iiiiii	Send Delay (ms)	iiiiii
Status	iii	Status	iii
COM-Quality (%)	iiiiii	COM-Quality (%)	iiiiii
Reset Output	iiiiii	Reset Output	iiiiii

Properties INPUT <-> BIT

General Access/Option Info

Type: BIT Name: M02

Bus: Simulation value 0

Pre-text: Mode

Default value: 0

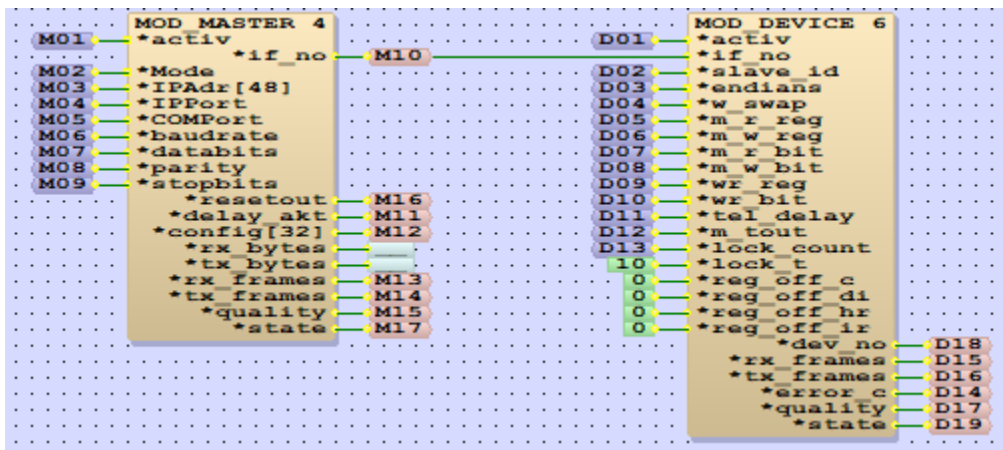
4. Set the “COM-Port” to 2 for the 3rd module. This means COM port 2.

(---Port)	(---)	Pre-text:	
IP-Port	iiiiii	COM-Port	
COM-Port	iiiiii	Default value:	2
Baudrate	iiiiii		
Databits	iiiiii		
Parity	iiiiii		
Stopbits	iiiiii		
Interface No.	iiiiii		
Send Delay (ms)	iiiiii		
Status	iii		
COM-Quality (%)	iiiiii		

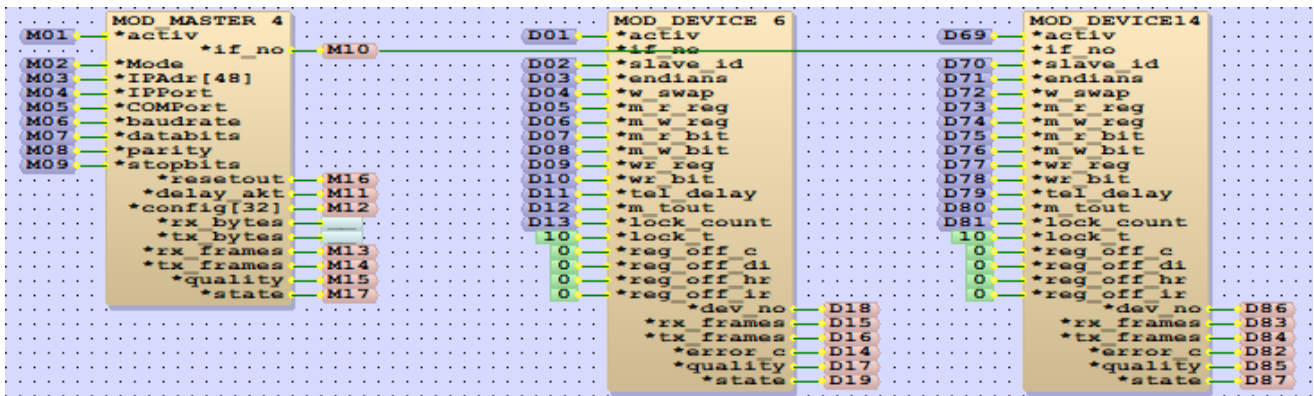
5. You can find an example of the default values like below. This new Modbus module allows you to connect Modbus devices via Modbus IP, COM2 and COM3 at the same time.

Mode	(1)	Mode	(0)	Mode	(0)
(192.168.170.99)		(192.168.170.189)		(192.168.170.189)	
IP-Port	502	IP-Port	502	IP-Port	502
COM-Port	3	COM-Port	3	COM-Port	2
Baudrate	4	Baudrate	4	Baudrate	4
Databits	2	Databits	2	Databits	2
Parity	1	Parity	1	Parity	1
Stopbits	1	Stopbits	1	Stopbits	1

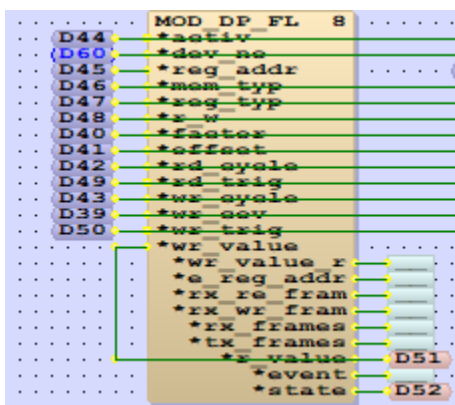
6. Now we connect a Modbus device to both Modbus Master 2 and 3, like below. You can just copy it from the one we did before. The HTML settings are all the same.



7. You can connect multiple Modbus devices to the same Modbus Master, like below. Just remember to change the default value for the “slave_id”.



8. Next, we add a “MOD_DP_FL”.



9. This time we don't connect the "dev_no" to any "MOD_DEV" module. Instead, we connect it to an "Input" so that we can change it online. The default value is set to "1000".

General Access/Option Info

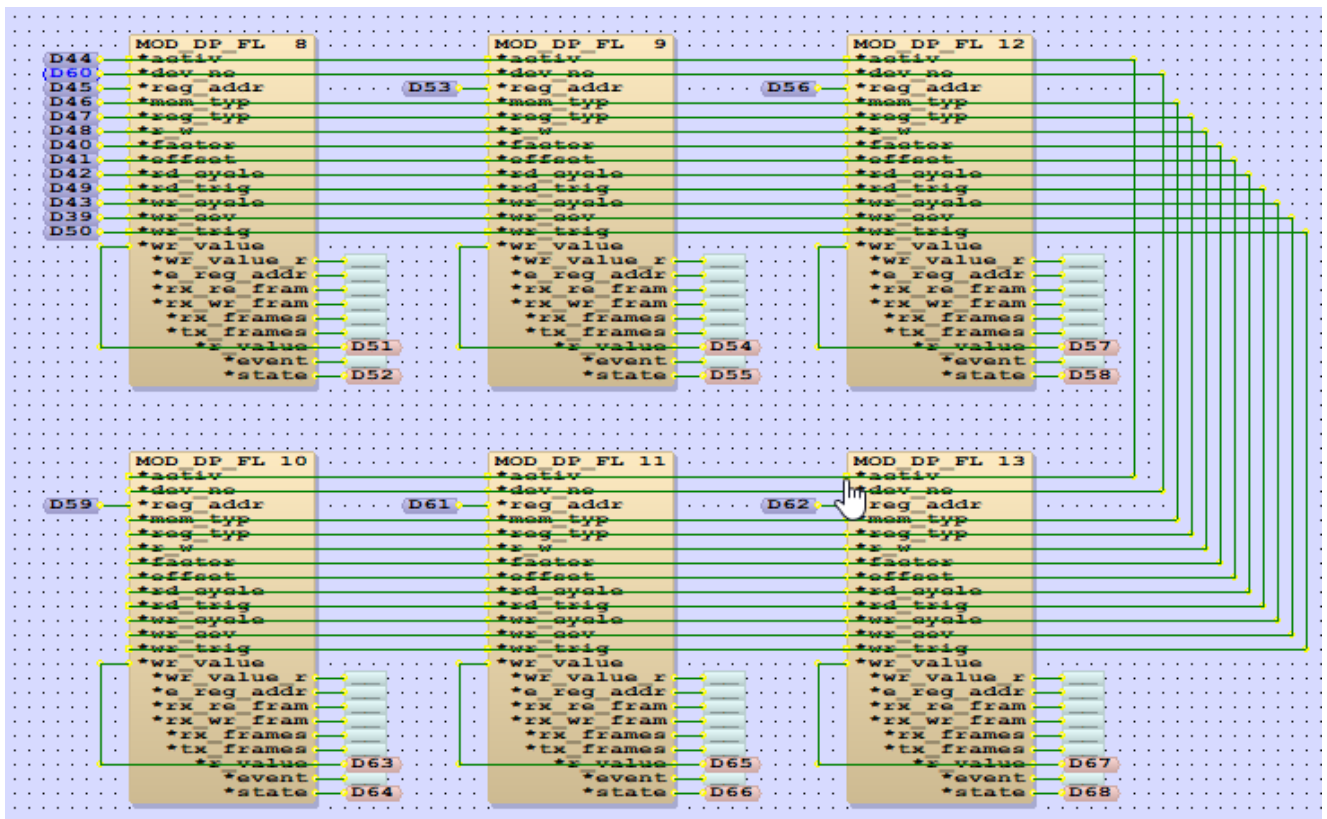
Type: UI Name: D60

Bus: Simulation value: 0

Pre-text: Device No.

Default value: 1000 Min: 0

10. Lastly, we copy and paste it 5 times and connect them like below. Since most of the settings are most likely the same in a controller so we don't need to have them all for each point.

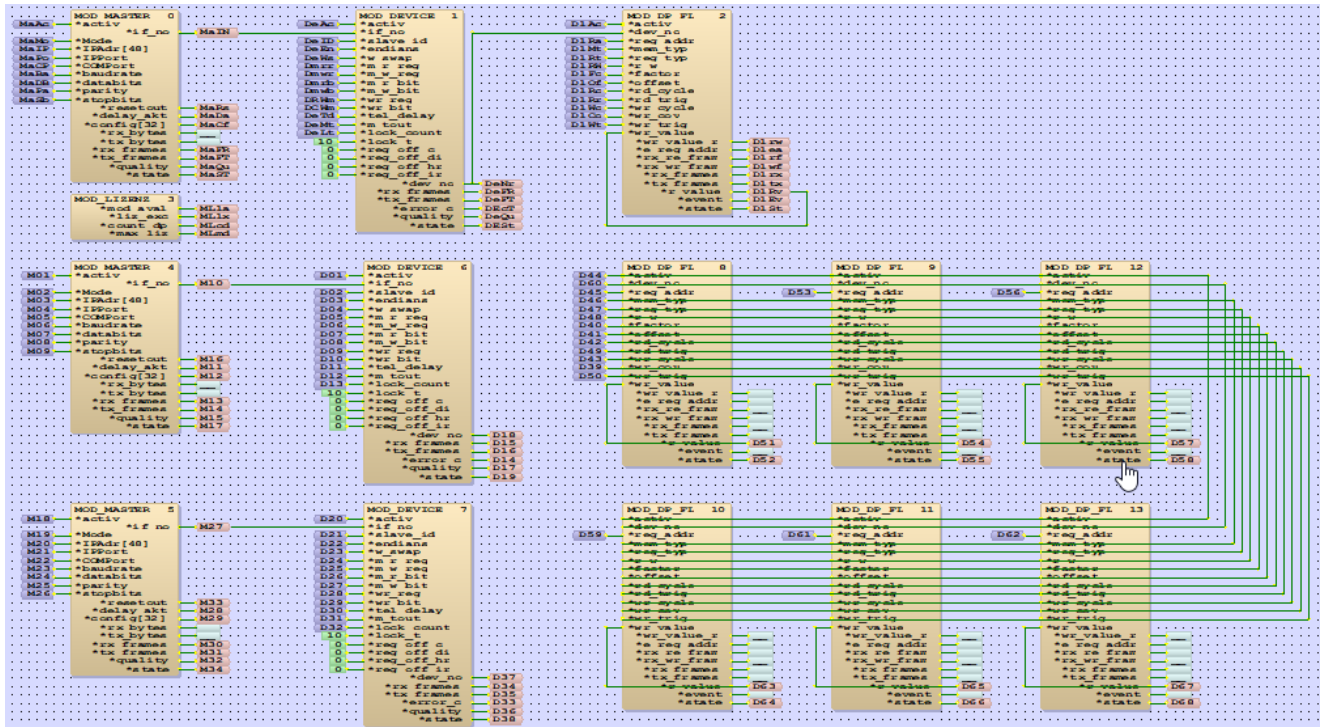


11. Create a new HTML page and setup like below for the 6 new points.

C:\Users\DEOSHK\AppData\Local\DEOS\OPEN FXL\4\workspace\prj\Testing\ISP02\modbus.f.uff - HTML - Modbus FL 2

Modbus FL 2			
Thursday, 06.04.2023, 14:12			
Modbus FL 2			
Active	(H)	Register Ad.	iiii
Device No.	iiii	FL Value	-ffff,f
Data type	iiii	Status:	iiii
Point type	iiii	Register Ad.	iiii
Read/Write	iiii	FL Value	-ffff,f
Factor	-ffff,f	Status:	iiii
Offset	-ffff,f	Register Ad.	iiii
Read cycle	iiii	FL Value	-ffff,f
Read Trigger	(H)	Status:	iiii
Write	iiii	Register Ad.	iiii
Write COV	-ffff,f	FL Value	-ffff,f
Write Trigger	(H)	Status:	iiii

12. So, this is the complete program for 3 Modbus channels, 3 Modbus devices and 7 Modbus points. Now, compile and load to your controller for testing.



13. After a "Preset" of the controller, with the default settings, all points connect to 1st point in the 1st Modbus device in the 1st master module, so they should read the same value, like below.

01: DCS.Open

- AHU
- AHU
- Events
- Modbus Device
- Modbus FL 1
- Modbus FL 1
- Modbus FL 2
- Modbus FL 2
- Modbus License
- Modbus Master

Active	<input checked="" type="checkbox"/>
Address	0
Point Type	Holding Register
Data Type	UI
Read/Write	Read
Factor	1.00
Offset	0.00
Read Cycle	2
Read Trigger	<input type="checkbox"/>
Write Cycle	0
Write COV	0.10
Write Trigger	<input type="checkbox"/>
Value	12345.00

Device Settings

Word Swap ☐
Endians ☐
Write Multiple Registers ☐
Write Multiple Bits ☐

01: DCS.Open

- AHU
- AHU
- Events
- Modbus Device
- Modbus FL 1
- Modbus FL 2
- Modbus FL 2
- Modbus License
- Modbus Master

Active	<input checked="" type="checkbox"/>
Device No.	1000
Point Type	Holding Register
Data Type	UI
Read/Write	Read
Factor	1.00
Offset	0.00
Read Cycle	2
Read Trigger	<input type="checkbox"/>
Write Cycle	0
Write COV	0.10
Write Trigger	<input type="checkbox"/>

Address	0	Address	0
Value	12345.00	Value	12345.00
Status	OK	Status	OK

Address	0	Address	0
Value	12345.00	Value	12345.00
Status	OK	Status	OK

Address	0	Address	0
Value	12345.00	Value	12345.00
Status	OK	Status	OK

14. You can change the Modbus address online to read different Modbus registers in the device.

Active	<input checked="" type="checkbox"/>	Address	1	Address	4
Device No.	1000	Value	101.00	Value	104.00
Point Type	Holding Register	Status	OK	Status	OK
Data Type	UI	Address	2	Address	5
Read/Write	Read	Value	102.00	Value	105.00
Factor	1.00	Status	OK	Status	OK
Offset	0.00	Address	3	Address	6
Read Cycle	2	Value	103.00	Value	106.00
Read Trigger	<input type="checkbox"/>	Status	OK	Status	OK
Write Cycle	0	Address		Address	
Write COV	0.10	Value		Value	
		Status		Status	

15. To connect the 6 points to another Modbus device, we need to change the “Device number”. To check it, go to the “Modbus Device” page. In the below example, you can see the device number for the 2nd Modbus device is “2000”.

▼ 01: DCS.Open

- AHU
- AHU
- Events
- Modbus Device**
- Modbus FL 1
- Modbus FL 1
- Modbus FL 2
- Modbus FL 2
- Modbus License
- Modbus Master
- Password
- ▶ Circuit times
- ▶ General
- ▶ OPEN IO-modules
- ▶ Service controller
- ▶ system

Active	(1)	Active	(1)	Active	(1)
Device ID	1	Device ID	1	Device ID	1
Endians	(0)	Endians	(0)	Endians	(0)
Wordswap	(0)	Wordswap	(0)	Wordswap	(0)
Max r register	30	Max r register	30	Max r register	30
Max w register	30	Max w register	30	Max w register	30
Max r Bits	30	Max r Bits	30	Max r Bits	30
Max w Bits	30	Max w Bits	30	Max w Bits	30
Reg. write Mode	(0)	Reg. write Mode	(0)	Reg. write Mode	(0)
Coil write Mode	(0)	Coil write Mode	(0)	Coil write Mode	(0)
Telegram delay	50	Telegram delay	50	Telegram delay	50
Max Timeout	200	Max Timeout	200	Max Timeout	200
Lock count	20	Lock count	20	Lock count	20
Rx Telegr.	1227	Rx Telegr.	0	Rx Telegr.	0
Tx Telegr.	1227	Tx Telegr.	0	Tx Telegr.	0
COM-Quality	100	COM-Quality	0	COM-Quality	0
Status	0	Status	0	Status	0
Faulty Telegr.	0	Faulty Telegr.	0	Faulty Telegr.	0
Devie Number	1000	Devie Number	2000	Devie Number	3000

16. Now change the “Device No.” of the points to “2000”, and then the points are now read from the 2nd device on the 2nd channel, which is using Modbus RTU via COM3.

Active ☒

Device No. 2000

Point Type Holding Register

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 ☐

Address	Value	Status	Address	Value	Status
1	123.00	OK	4	456.00	OK
2	234.00	OK	5	567.00	OK
3	345.00	OK	6	678.00	OK

17. You can freely change the Modbus master settings online for the 3 channels.

▼ 01: DCS.Open

- AHU
- AHU
- Events
- Modbus Device
- Modbus FL 1
- Modbus FL 1
- Modbus FL 2
- Modbus FL 2
- Modbus License
- Modbus Master**
- Password
- ▶ Circuit times
- ▶ General
- ▶ OPEN IO-modules
- ▶ Service controller
- ▶ system

Active	(1)	Active	(1)	Active	(1)
Mode	(1)	Mode	(0)	Mode	(0)
(192.168.170.99)		(192.168.170.189)		(192.168.170.189)	
IP-Port	502	IP-Port	502	IP-Port	502
COM-Port	3	COM-Port	3	COM-Port	2
Baudrate	4	Baudrate	4	Baudrate	4
Databits	2	Databits	2	Databits	2
Parity	1	Parity	1	Parity	1
Stopbits	1	Stopbits	1	Stopbits	1
Interface No.	1	Interface No.	2	Interface No.	3
Send Delay(ms)	50	Send Delay(ms)	50	Send Delay(ms)	0
Status	0	Status	0	Status	0
COM-Quality (%)	100	COM-Quality (%)	100	COM-Quality (%)	0
Reset Output	0	Reset Output	0	Reset Output	0
(IP MODE)		(9600,8,N,1)		(No Datapoints)	
Rx Frames	1443	Rx Frames	156	Rx Frames	0
Tx Frames	1443	Tx Frames	156	Tx Frames	0

18. To help you start testing this new Modbus module in OPEN FXL 4, we've put the testing project in our server. Please feel free to contact us if you need it.