

## TT230601 – OFXL - Modbus Module Read Write Priority

1. When you need to read/write a Modbus point, we normally set the “r\_w” input of the “MOD\_DP\_FL” module to 3 (i.e. reading and writing”).

<b>r_w</b>	<p>Request type for Modbus register of a Modbus participant. Setting whether the Modbus register is to be used read, write or bidirectional (read and write). In addition, it is possible to switch on a setpoint coupling, which compares the 'wr_value' and the 'r_value' with each other. The necessity of the setting depends on the project.</p> <ol style="list-style-type: none"><li>1 reading</li><li>2 writing</li><li>3 reading and writing (without alignment)</li><li>4 Setpoint coupling DEOS priority (read and write with alignment) The read value 'r_value' is copied to the write value 'wr_value'. If the write value 'wr_value' and the read value 'r_value' change at the same time, the write value 'wr_value' is taken over and the read value 'r_value' is overwritten. Only works with an input of the float type. (Note: If a float value is to be synchronised from another FBD sheet, an address copy must be used and not a cross reference. An address copy is a transfer reference without specification of the controller programme. )</li><li>5 Setpoint coupling Device priority (read and write with alignment)  The read value 'r_value' is copied to the write value 'wr_value'. If the write value 'wr_value' and the read value 'r_value' change at the same time, the read value 'r_value' is adopted and the write value 'wr_value' and its change are overwritten. The first writing is done only after the first reading of the value from the unit. This applies to switching to DEOS priority 'r_w'=5, restarting the controller and in the event of an error when the unit is not present. Only works with a float type input. (Note: If a float value is to be synchronised from another FBD sheet, an address copy must be used and not a cross reference. An address copy is a transfer reference without specifying the controller programme. )</li></ol>
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2. Normally, this works in most of the cases. But since the controller may sometimes read and write the same point at the same time, so we have 2 more options for different scenarios (settings 4 and 5).

Read/Write	Read/Write
	Read
	Write
	Read/Write
	Read/Write(Pri)
	Read(Pri)/Write

3. So, we'll try some cases with setting 3 first. It works fine normally, and you can see the value change and you can change the value also.

▼ 01: DCS.Open

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

Active	<input checked="" type="checkbox"/>	Device Settings	
Address	0	Word Swap	<input type="checkbox"/>
Point Type	Holding Register	Endians	<input type="checkbox"/>
Data Type	UI	Write Multiple Registers	<input type="checkbox"/>
Read/Write	Read/Write	Write Multiple Bits	<input type="checkbox"/>
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	18.00		
Status	OK		

4. Let's try some special cases, first if the Modbus device is offline, and you change the value in the OPEN controller (e.g. from 18 to 16).

The screenshot shows the configuration window for a Modbus device. On the left, a tree view under '01: DCS.Open' lists various components, with 'Modbus FL 1' selected. The main panel contains a list of parameters: Active (checked), Address (0), Point Type (Holding Register), Data Type (UI), Read/Write (Read/Write), Factor (1.00), Offset (0.00), Read Cycle (2), Read Trigger (unchecked), Write Cycle (0), Write COV (0.10), Write Trigger (unchecked), and Value (16.00). To the right, 'Device Settings' includes Word Swap, Endians, Write Multiple Registers, and Write Multiple Bits, all with checkboxes. At the bottom, the Status field displays the message: 'There is an error at the corresponding device module'.

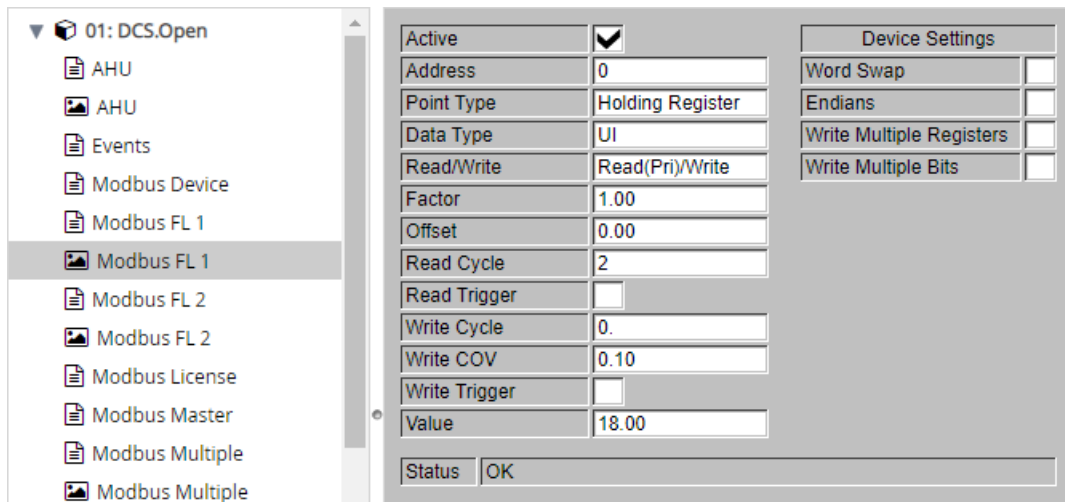
5. Now when the Modbus device is online again, the new value in the controller (i.e. 16) will be written to the Modbus device.

This screenshot is identical to the previous one, showing the same configuration parameters. However, the Status field at the bottom now displays 'OK', indicating the device is online.

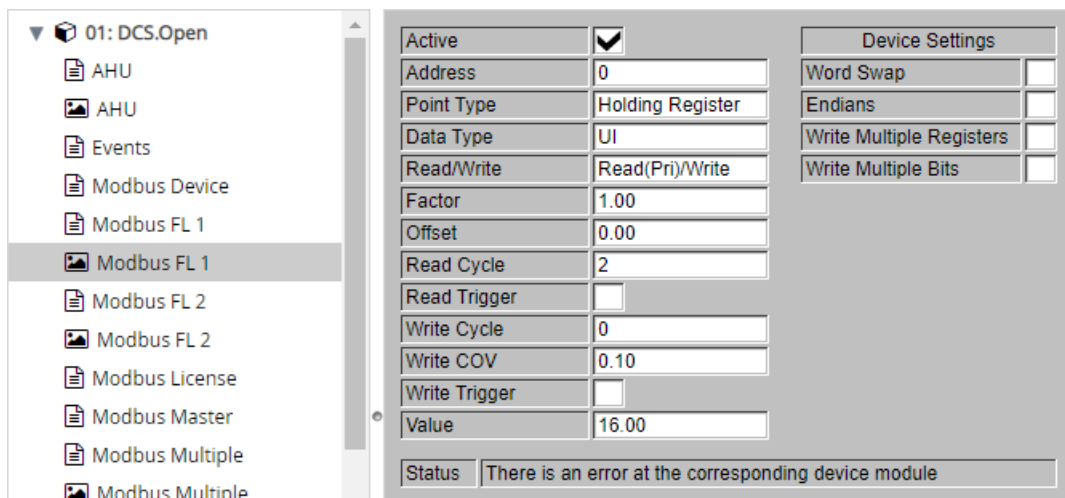
6. Another case is when the controller is power off, and during that time the Modbus value is changed on the Modbus device. In this example, we turn off the controller, change the value on the Modbus device from 16 to 18, and turn on the controller again. Similar to the above, the “old” value in the controller (i.e. 16) will be written to the Modbus device.

This screenshot is identical to the previous one, showing the same configuration parameters. The Status field at the bottom displays 'OK'.

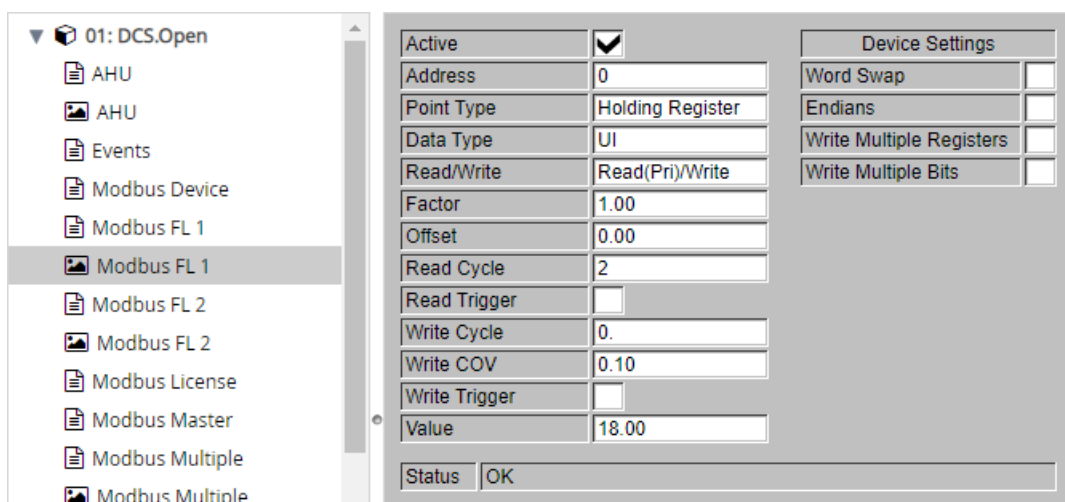
7. Sometimes if you don't want the controller value to be written to the Modbus device in the above cases, you can set the “w\_r” setting to 5 (read and write with read priority).



8. Now change the value in the controller when the device is offline (e.g. from 18 to 16).



9. This time, when the Modbus device is online again, the value from the Modbus device (i.e. 18) is read first and update the value in the controller.



10. Similarly, when the controller is power off, and the value in the Modbus device is changed. After the controller is power on again, the value from the Modbus device is also read first and update the value in the controller.

11. If you want the opposite, then you can set "w\_r" to 4 (read and write with write priority). But since the controller normally read more often than write, it is not easy that you can see the different between 4 and 3.

12. If you want to always override the value in the Modbus device. You can set “w\_r” to 2 (i.e. write only), and then set a “Write Cycle” time. In the example below, we set it to 2 seconds, so it will write the value to the Modbus device every 2 seconds.

01: DCS.Open	
AHU	
AHU	
Events	
Modbus Device	
Modbus FL 1	
<b>Modbus FL 1</b>	
Modbus FL 2	
Modbus FL 2	
Modbus License	
Modbus Master	
Modbus Multiple	
Modbus Multiple	

Device Settings	
Active	<input checked="" type="checkbox"/>
Address	0
Point Type	Holding Register
Data Type	UI
Read/Write	Write
Factor	1.00
Offset	0.00
Read Cycle	2
Read Trigger	
Write Cycle	2
Write COV	0.10
Write Trigger	
Value	18.00
Status	OK