

TT230602 – OFXL - Modbus Module Debug Module

1. With the “MOD_MA_EXPAN” module, we provide some debugging and logging functions for the Modbus master module.

The screenshot shows the MOD_MA_EXPAN module configuration on the left and its properties window on the right. The module is configured with various inputs and outputs. The properties window displays the following information:

MOD_MA_EXPAN
Modbus Master Expansion Modul, Version 1.0.0

Funktion
Provides debugging and logging functions for the Modbus master.

2. Add the module in FUP and setup the HTML page like below.

The screenshot shows the MOD_MA_EXPAN module configuration on the left and the Modbus Debug HTML page on the right. The HTML page displays the following information:

Friday, 12.05.2023, 11:17

Modbus Debug

Interface No.	iiii
Generate point list for selected interface	(0)
Generate point list for all interfaces	(0)
Enable Raw Telegram Log	(0)
Log Time (m)	iiii
Sent telegrams per second	-ff f
Number of Devices in Master Module	iii
Number of Points in Master Module	iii
Time since the last telegram sent (s)	iii
Time since the last ack telegram (s)	iii

Log Telegramm (0)
Set Log Level iiiii
forceSumUp (0)
Status -11

3. Example default value like below. The “if_no” is set as an Input with default 1 and you can link it to any master module online.

The screenshot shows the MOD_MA_EXPAN module configuration on the left and the Modbus Debug HTML page on the right. The HTML page displays the following information:

Friday, 12.05.2023, 11:19

Modbus Debug

Interface No.	1
Generate point list for selected interface	(0)
Generate point list for all interfaces	(0)
Enable Raw Telegram Log	(0)
Log Time (m)	10
Sent telegrams per second	0.0
Number of Devices in Master Module	0
Number of Points in Master Module	0
Time since the last telegram sent (s)	0
Time since the last ack telegram (s)	0

Log Telegramm (0)
Set Log Level 0
forceSumUp (0)
Status 0

- Load it to your controller and you can see some basic communication information regarding Modbus master module 1.

▼ 01: DCS.Open

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Events

Modbus Debug

Modbus Device

Modbus FL 1

Modbus FL 1

Modbus FL 2

Modbus FL 2

Modbus License

Interface No. 1

Generate point list for selected interface (0)

Generate point list for all interfaces (0)

Enable Raw Telegram Log (0)

Log Time (m) 0

Sent telegrams per second 3.5

Number of Devices in Master Module 1

Number of Points in Master Module 7

Time since the last telegram sent (s) 1

Time since the last ack telegram (s) 1

- You can find the Interface No. for each master module from the “Modbus Master” HTML page.

▼ 01: DCS.Open

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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

Active (1)	Active (1)	Active (1)
Mode (1)	Mode (0)	Mode (0)
(192.168.170.189)	(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

- Now change the “Interface No.” of the Modbus Debug page to 2. Please note that the “Sent telegrams per second” may take some time to update.

▼ 01: DCS.Open

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Events

Modbus Debug

Modbus Device

Modbus FL 1

Modbus FL 1

Modbus FL 2

Modbus FL 2

Modbus License

Modbus Master

Interface No. 2

Generate point list for selected interface (0)

Generate point list for all interfaces (0)

Enable Raw Telegram Log (0)

Log Time (m) 0

Sent telegrams per second 3.5

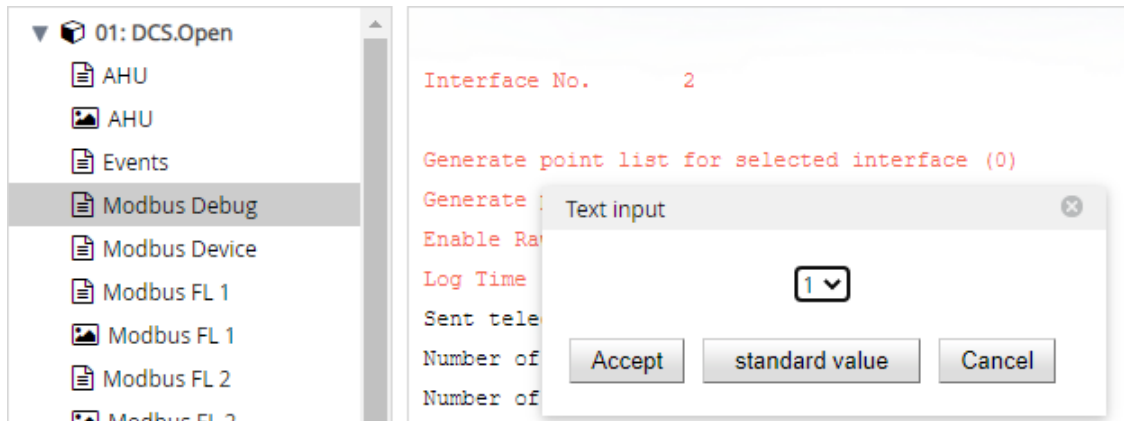
Number of Devices in Master Module 3

Number of Points in Master Module 12

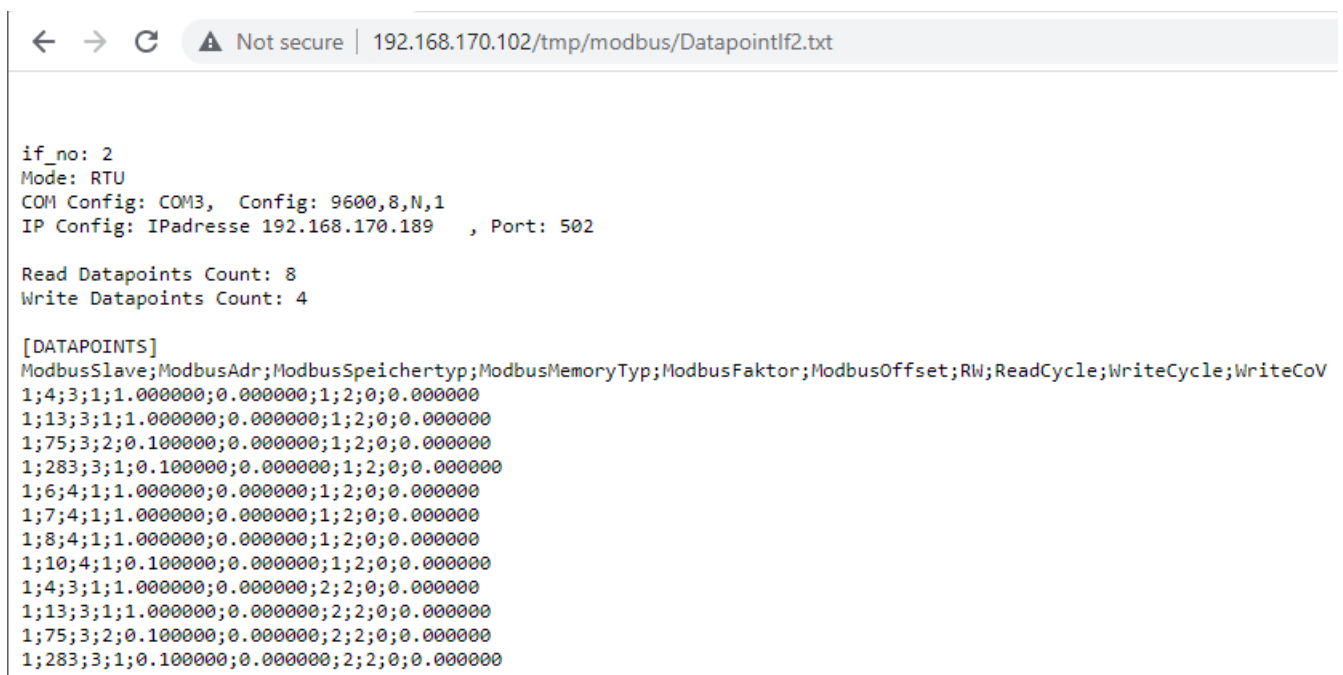
Time since the last telegram sent (s) 1

Time since the last ack telegram (s) 1

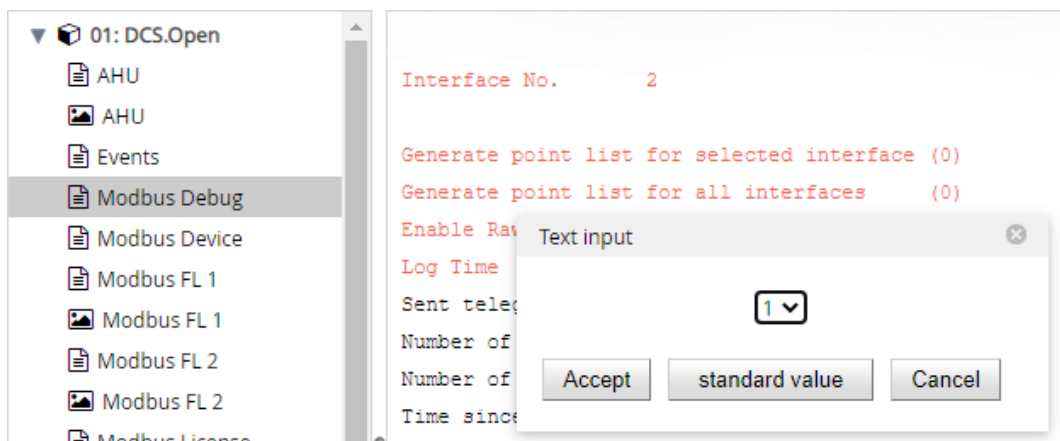
7. Now set the “Generate point list for selected interface” to 1. This will provide you with a summary of the points in the Master Module.



8. The information can be view by this “ipaddress/tmp/modbus/Datapointlf[if_no].txt”. In this example, we use <http://192.168.170.102/tmp/modbus/Datapointlf2.txt>.



9. Please note that it only generates once when you set the value to 1. If later, you add/change points and/or Modbus device, you need generate it again.
10. In this example, we’ve 4 points with “Read” and 4 points with “Read/Write”, so the “Read Datapoint Count” is 8 and “Write Datapoint Count” is 4.
11. Set “Generate point list for all interfaces” to 1 to create a summary for all Modbus master modules.



12. The information can be view by this “ipaddress/tmp/modbus/DatapointList.txt”. In this example, we use <http://192.168.170.102/tmp/modbus/DatapointList.txt>.

```
← → ↺ ⚠ Not secure | 192.168.170.102/tmp/modbus/DatapointList.txt

if_no: 1
Mode: IP
COM Config: COM3, Config: IP MOD
IP Config: IPAdresse 192.168.170.189 , Port: 502

Read Datapoints Count: 7
Write Datapoints Count: 0

[DATAPOINTS]
ModbusSlave;ModbusAdr;ModbusSpeichertyp;ModbusMemoryTyp;ModbusFaktor;ModbusOffset;RW;ReadCycle;WriteCycle;WriteCoV
1;0;3;1;1.000000;0.000000;1;2;0;0.100000
1;100;3;1;1.000000;0.000000;1;2;0;0.100000
1;200;3;1;1.000000;0.000000;1;2;0;0.100000
1;300;3;1;1.000000;0.000000;1;2;0;0.100000
1;400;3;1;1.000000;0.000000;1;2;0;0.100000
1;500;3;1;1.000000;0.000000;1;2;0;0.100000
1;600;3;1;1.000000;0.000000;1;2;0;0.100000

if_no: 2
Mode: RTU
COM Config: COM3, Config: 9600,8,N,1
IP Config: IPAdresse 192.168.170.189 , Port: 502

Read Datapoints Count: 8
Write Datapoints Count: 4

[DATAPOINTS]
ModbusSlave;ModbusAdr;ModbusSpeichertyp;ModbusMemoryTyp;ModbusFaktor;ModbusOffset;RW;ReadCycle;WriteCycle;WriteCoV
1;4;3;1;1.000000;0.000000;1;2;0;0.000000
```

13. The Modbus RTU trace file link is “ipaddress/tmp/COM[number of COMport]_Trace.txt”. In this example, we use http://192.168.170.102/tmp/COM3_Trace.txt

```
← → ↺ ⚠ Not secure | 192.168.170.102/tmp/COM3_Trace.txt

12.05.2023 13:28:20.775 [1926]comser ->
12.05.2023 13:28:20.776 R [ '0x01''0x03''0x02''0x00''0x1E'8L ] HEX: [01 03 02 00 1E 38 4C ]
12.05.2023 13:28:20.864 S>[ '0x01''0x03''0x01''0x1B''0x00''0x01''0xF5''0xF1' ] HEX: [01 03 01 1B 00 01 F5 F1 ]
12.05.2023 13:28:20.884 R [ '0x01''0x03''0x02''0x00''0xF0' ] HEX: [01 03 02 00 F0 ]
12.05.2023 13:28:20.895 R [ '0xB8''0x00' ] HEX: [B8 00 ]
12.05.2023 13:28:20.991 S>[ '0x01''0x04''0x00''0x06''0x00''0x03''P'0x0A' ] HEX: [01 04 00 06 00 03 50 0A ]
12.05.2023 13:28:21.015 R [ '0x01''0x04''0x06''0x00''0x04''0x00''0x02''0x00''0x03'p ] HEX: [01 04 06 00 04 00 02 00 03 70 ]
12.05.2023 13:28:21.035 R [ '0x92' ] HEX: [92 ]
12.05.2023 13:28:21.131 S>[ '0x01''0x04''0x00''0x0A''0x00''0x01''0x11''0xC8' ] HEX: [01 04 00 0A 00 01 11 C8 ]
12.05.2023 13:28:21.155 R [ '0x01''0x04''0x02''0x01''#''0xF9'y' ] HEX: [01 04 02 01 23 F9 79 ]
```

14. The Modbus IP trace file link is “ipaddress/tmp/modbus/MODIP[ip address of remote terminal]:[port of remote terminal]_Trace.txt”. In this example, we use http://192.168.170.102/tmp/modbus/MODIP192.168.170.189:502_Trace.txt.
15. You need to enable the Modbus IP trace and set the log time like below (“Enable Raw Telegram Log” and “Log Time (m)”). Also, make sure the “Interface No.” is set correctly for the corresponding Modbus Master module.

▼ 01: DCS.Open

AHU

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Events

Modbus Debug

Modbus Device

Modbus FI 1

Interface No. 1

Generate point list for selected interface (0)

Generate point list for all interfaces (0)

Enable Raw Telegram Log (1)

Log Time (m) 7

16. The Modbus IP trace will then start for the “Log Time (m)” period. The “Log Time (m)” will start to count down to 0 and the trace will be stopped.

← → ↺ ⚠ Not secure | 192.168.170.102/tmp/modbus/MODIP192.168.170.189:502_Trace.txt

```

12.05.2023 13:36:59.107: S> 66 79 00 00 00 06 01 03 00 00 00 01
12.05.2023 13:36:59.113: R> 66 79 00 00 00 05 01 03 02 00 00
12.05.2023 13:36:59.226: S> 66 7A 00 00 00 06 01 03 00 64 00 01
12.05.2023 13:36:59.236: R> 66 7A 00 00 00 05 01 03 02 00 00
12.05.2023 13:36:59.326: S> 66 7B 00 00 00 06 01 03 00 C8 00 01
12.05.2023 13:36:59.329: R> 66 7B 00 00 00 05 01 03 02 00 00
12.05.2023 13:36:59.446: S> 66 7C 00 00 00 06 01 03 01 2C 00 01
12.05.2023 13:36:59.453: R> 66 7C 00 00 00 05 01 03 02 00 00
12.05.2023 13:36:59.546: S> 66 7D 00 00 00 06 01 03 01 90 00 01
12.05.2023 13:36:59.561: R> 66 7D 00 00 00 05 01 03 02 00 00
12.05.2023 13:36:59.646: S> 66 7E 00 00 00 06 01 03 01 F4 00 01
12.05.2023 13:36:59.654: R> 66 7E 00 00 00 05 01 03 02 00 00
12.05.2023 13:36:59.746: S> 66 7F 00 00 00 06 01 03 02 58 00 01
12.05.2023 13:36:59.747: R> 66 7F 00 00 00 05 01 03 02 00 00
12.05.2023 13:37:01.128: S> 66 80 00 00 00 06 01 03 00 00 00 01
12.05.2023 13:37:01.142: R> 66 80 00 00 00 05 01 03 02 00 00

```

17. You can also find more information regarding the Modbus communication from the Master and Device modules, e.g. COM-Quality, Status, Rx/Tx Telegram, Faulty Telegram, etc.

▼ 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
- 🖼️ Modbus UI and ULI
- 📄 Modbus UL ad ULI
- 🖼️ Password

Active (1)

Mode (1)

(192.168.170.189)

IP-Port 502

COM-Port 3

Baudrate 4

Databits 2

Parity 1

Stopbits 1

Interface No. 1

Send Delay(ms) 50

Status 0

COM-Quality (%) 100

Reset Output 0

(IP MODE)

Rx Frames 27751

Tx Frames 27751

▼ 01: DCS.Open

- 📄 AHU
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Active (1)

Device ID 1

Endians (0)

Wordswap (0)

Max r register 30

Max w register 30

Max r Bits 30

Max w Bits 30

Reg. write Mode (0)

Coil write Mode (0)

Telegram delay 50

Max Timeout 200

Lock count 20

Rx Telegr. 27905

Tx Telegr. 27905

COM-Quality 100

Status 0

Faulty Telegr. 0

Device Number 1000

18. You can set the “Reset Output” to 1 to reset all the above Modbus communication information in 17 to zero.