

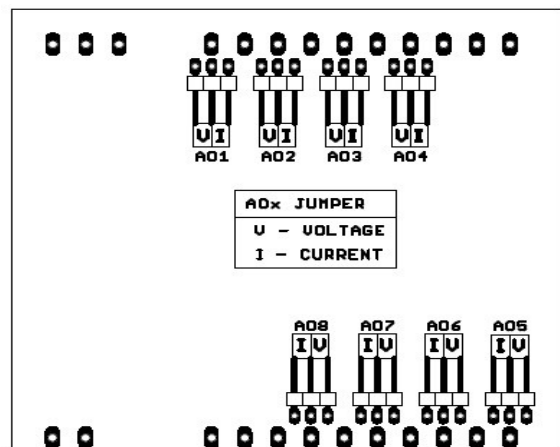
## **VOLTAGE output configuration and connecting with SDM-8AO by RS485 Modbus.**

1. Remove a bottom cover of **SDM-8AO**:

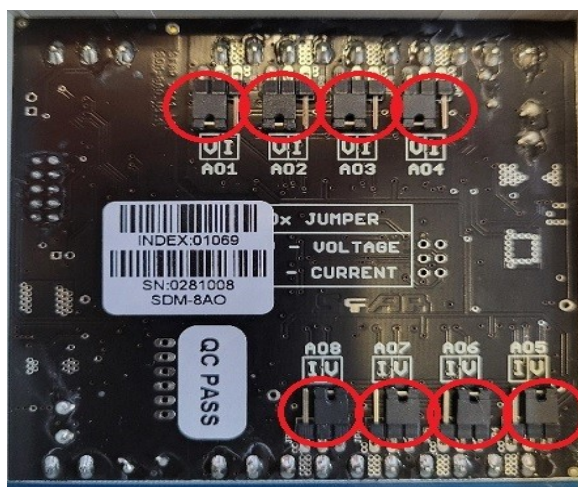


2. Set jumpers to VOLTAGE outputs. The channel with voltage output must have shorted jumpers marked as current "V"

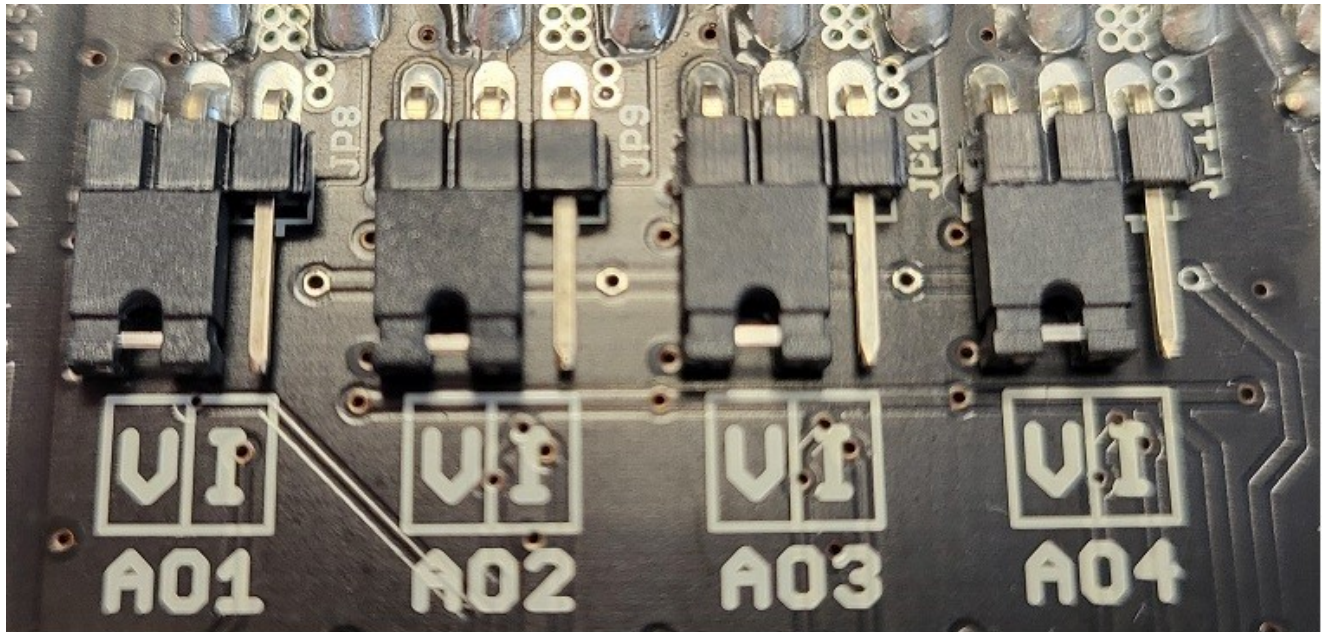
Location of the jumpers



Jumper	Description
	Current output (default)
	Voltage output



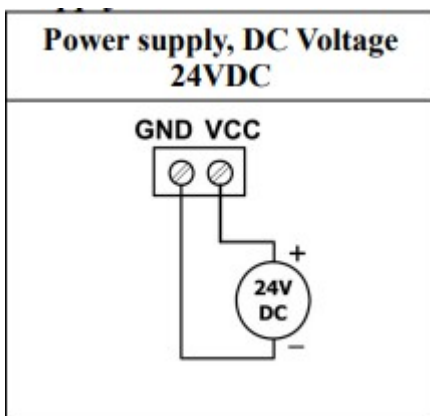
View of the shorted jumpers in the "V" position



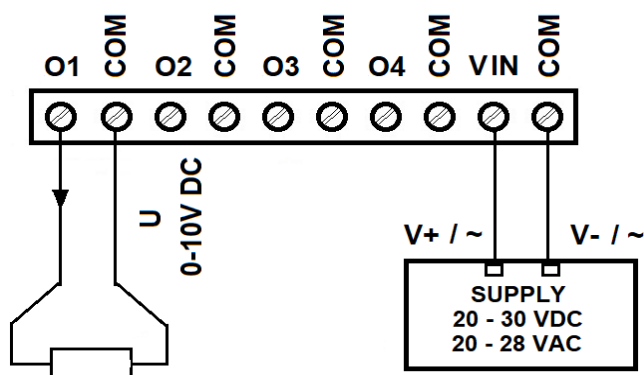
3. Close **SDM-8AO**

4. Connect

A. power supply:



### B. power supply of analog outputs



5. Connect SDM-8AO by USB cable to IO Configurator and set type of output.

Link to download:

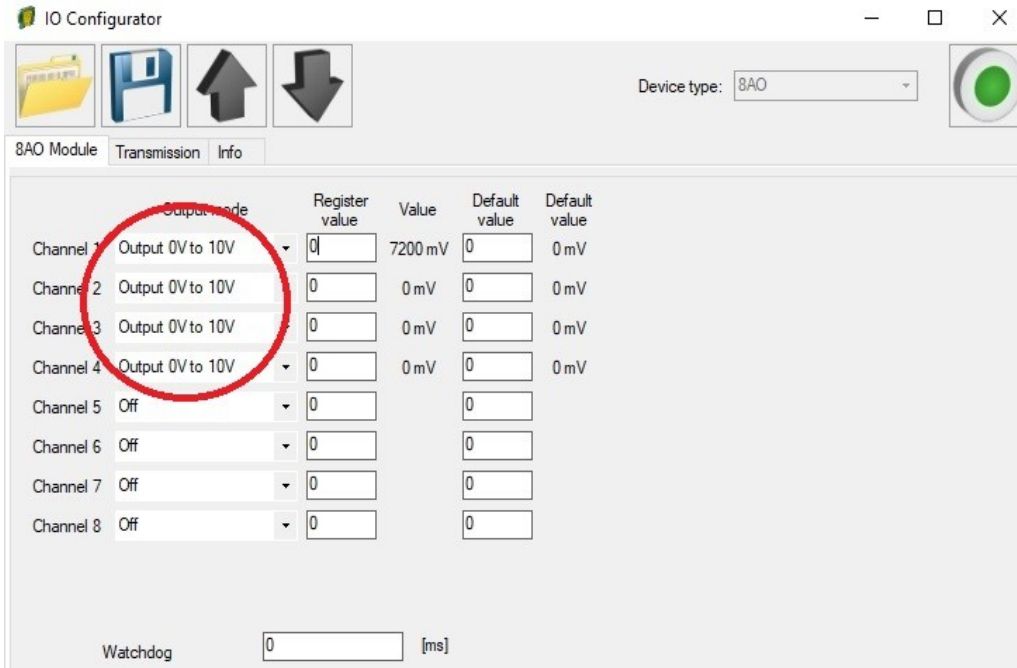
[https://www.aspar.com.pl/katalogi/IOMODULES/KONFIGURATOR/software/Konfigurator\\_IO.zip](https://www.aspar.com.pl/katalogi/IOMODULES/KONFIGURATOR/software/Konfigurator_IO.zip)

The IO Configurator allows to set one type of voltage outputs:

- 0 VDC to 10 VDC                      Register value - range: 0 - 10000

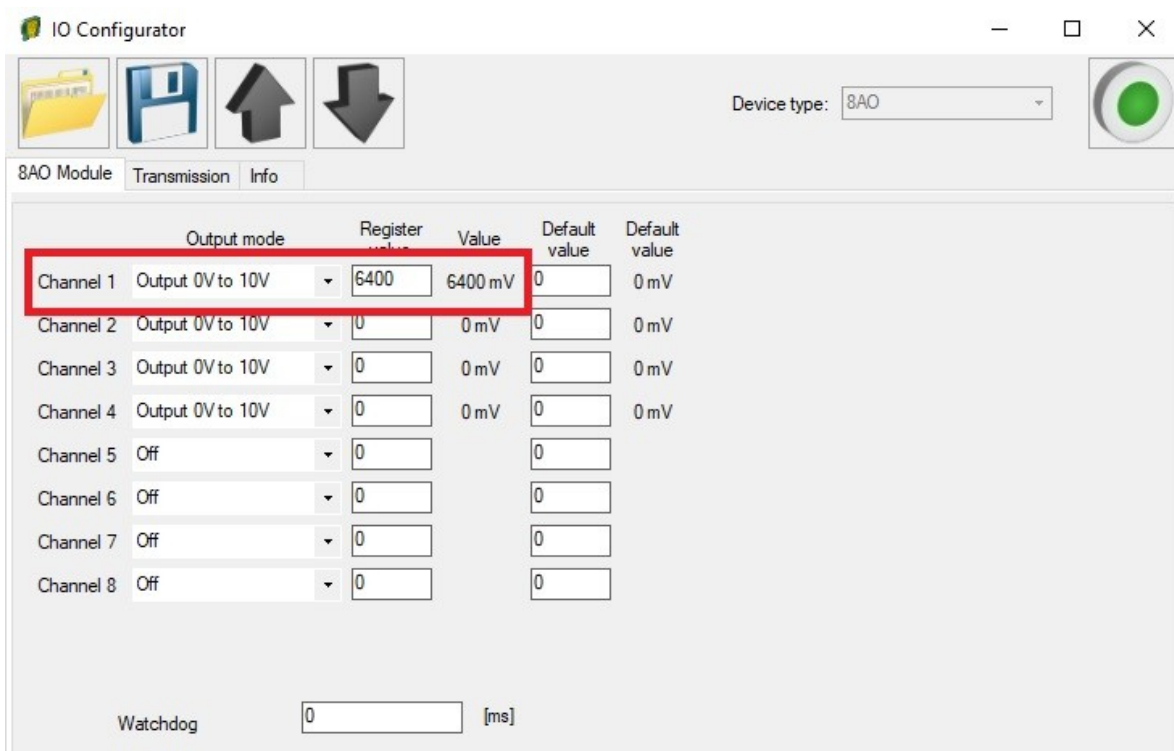
### Examples

mode 0-10VDC	register value: 0	output value: 0 VDC
mode 0-10VDC	register value: 3500	output value: 3,5 VDC
mode 0-10VDC	register value: 7200	output value: 7,2 VDC
mode 0-10VDC	register value: 10000	output value: 10 VDC



6. Set 6,4VDC on channel 1 using IO Configurator. Channel 1 is configured as 0-10VDC. The range of register is: 0-10000. This means that the register value should be **6400** to get **6,4VDC** at the analog output.

mode 0-10VDC      register value: 6400      output value: 6,4 VDC



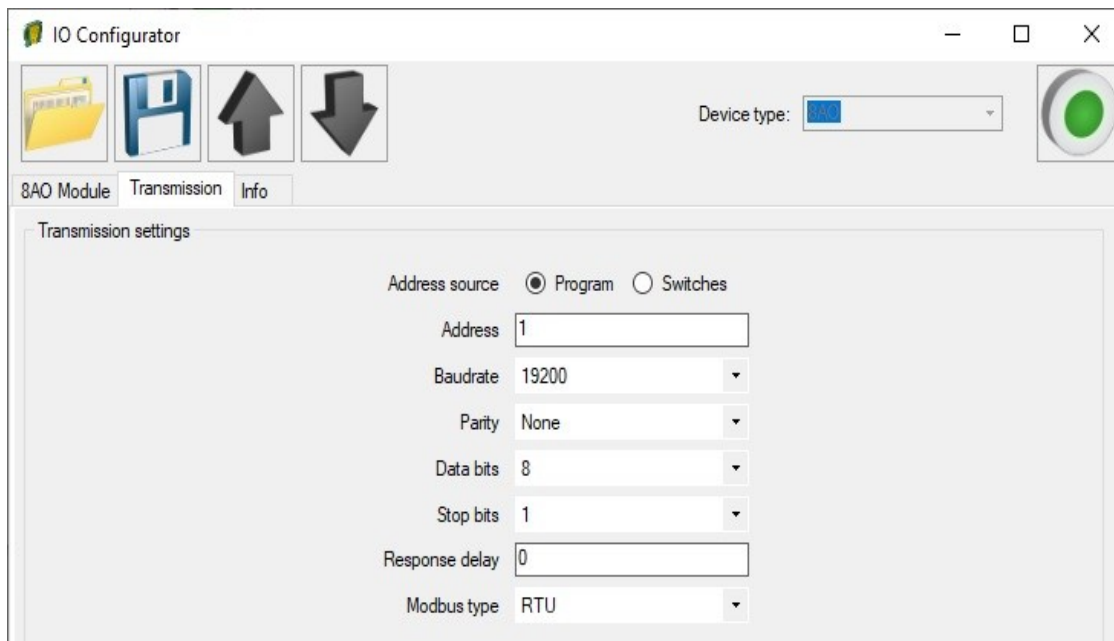
6.1. Measure the output voltage on channel 1 with a multimeter.



7. Set 4,0 VDC on channel 1 using **Modbus** protocol. Channel 1 is configured as 0-10VDC. The range of register is: 0-10000. This means that the register value should be **4000** to get **4VDC** at the analog output



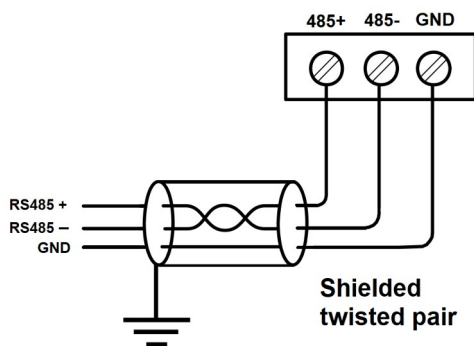
7.1. Set communication parameters in IO Configurator (SDM-8AO is a Modbus slave, client)



7.2. Set communication parameters in your **Master Device** (Baudrate, parity, Data bits, Stop bits, Modbus type – the same, Address – other).

7.3. Disconnect IO Configurator

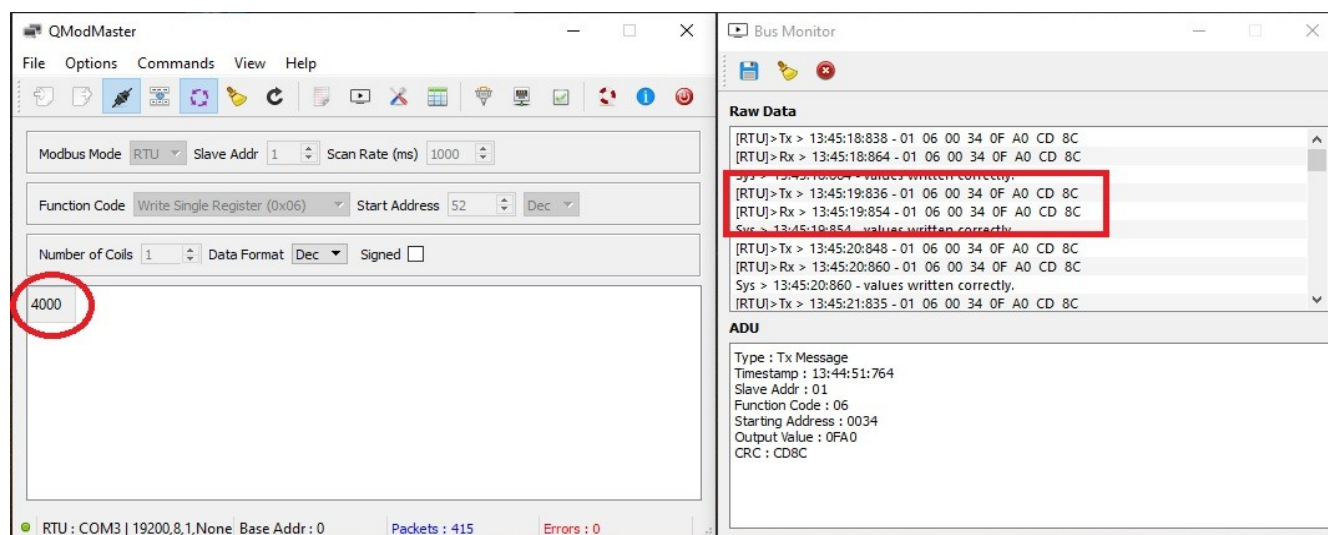
7.4. Connect SDM-8AO with your Master Device by RS485:



7.5. Master Device: Send a query to SDM-8AO – write value of analog output AO 1 (Channel 1). Use Modbus function - **Write Single Register 06**. Address of the register analog output 1 (AO 1): **52** (dec) or **34** (hex). New register value – 4000.

40053	52	0x34	Analog output 1	Read & Write	Value of analog output:  in mV for voltage output (max 10240)  in $\mu$ A for current output 0 - 20mA (max 20480)  in ‰ for current output 4-20mA (max 1000)
40054	53	0x35	Analog output 2	Read & Write	
40055	54	0x36	Analog output 3	Read & Write	
40056	55	0x37	Analog output 4	Read & Write	
40057	56	0x38	Analog output 5	Read & Write	
40058	57	0x39	Analog output 6	Read & Write	
40059	58	0x3A	Analog output 7	Read & Write	
40060	59	0x3B	Analog output 8	Read & Write	

In this example Modbus Master Device is software – QModMaster:



The screenshot displays the QModMaster software interface. On the left, the 'Modbus Mode' is set to 'RTU', 'Slave Addr' is '1', and 'Scan Rate (ms)' is '1000'. The 'Function Code' is 'Write Single Register (0x06)', 'Start Address' is '52', and 'Data Format' is 'Dec'. The 'Number of Coils' is '1'. The 'Output Value' field is set to '4000'. On the right, the 'Bus Monitor' window shows a list of raw data packets. A red box highlights the following packets:

```
[RTU]>Tx > 13:45:18:838 - 01 06 00 34 0F A0 CD 8C
[RTU]>Rx > 13:45:18:864 - 01 06 00 34 0F A0 CD 8C
[RTU]>Tx > 13:45:19:836 - 01 06 00 34 0F A0 CD 8C
[RTU]>Rx > 13:45:19:854 - 01 06 00 34 0F A0 CD 8C
Sys > 13:45:19:854 - values written correctly.
```

Below the raw data, the 'ADU' (Application Data Unit) details are shown:

```
Type : Tx Message
Timestamp : 13:44:51:764
Slave Addr : 01
Function Code : 06
Starting Address : 0034
Output Value : 0FA0
CRC : CD8C
```



7.6. View of communication frame:

A. query to SDM-8AO:

01 06 00 **34** 0F AO CD 8C

B. answer from SDM-8AO

01 06 00 34 **0F A0** CD 8C

**0F A0** (hex) = **4000** (dec)

7.7. The new value of register 52 (dec) – AI 1 – analog output 1 is: **4000**.  
**4000 = 4,00VDC**

7.8. Measure the output voltage on channel 1 with a multimeter.



8. Connection of the voltage output.

