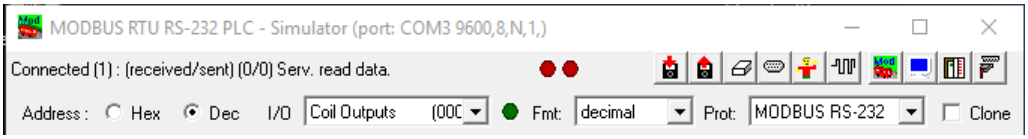
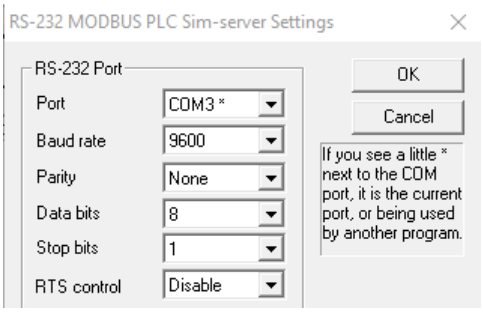
TT190801 – FUP - Modbus Integration

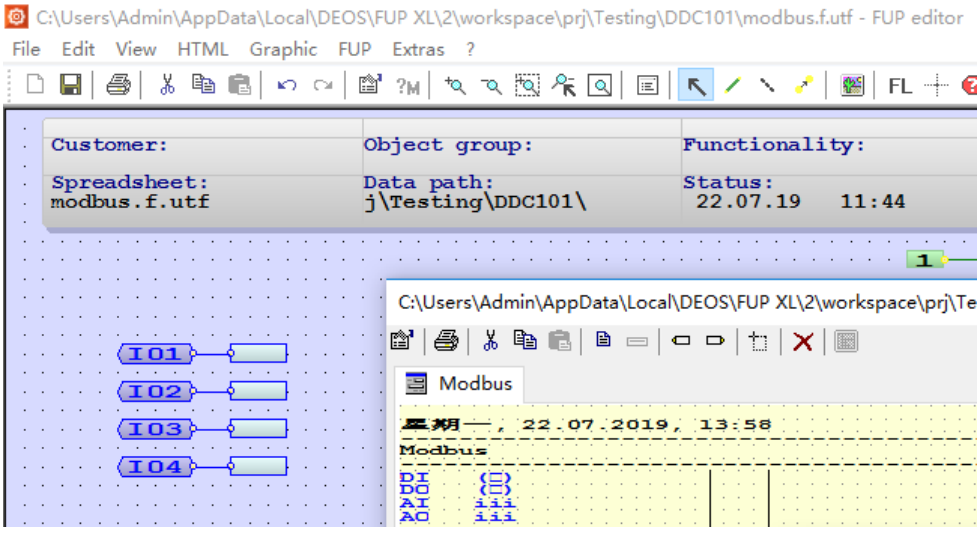
1. We will show you how to integrate Modbus device (RTU, RS-485) now. For testing, we use Modbus simulation software running on your PC and use an USB to RS-485 convertor to connect to the OPEN 600 COM3 (If you don't have the convertor, please refer to "TT190802" so that you can try it using Modbus TCP/IP)
2. You can download the Modbus simulation software at http://www.plcsimulator.org/downloads
3. Start the software, set the "Port" to "Modbus RS-232"



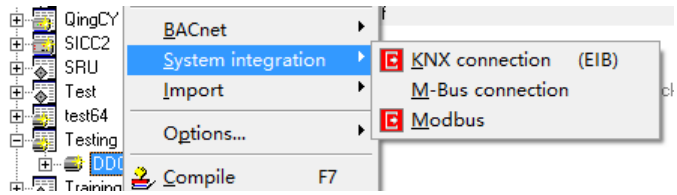
4. Connect the USB to RS-485 convertor to your PC. Click this button to setup the COM port. Note the "Port" may not be the same here. Connect the RS-485 cable between USB convertor to the COM3 of your OPEN 600



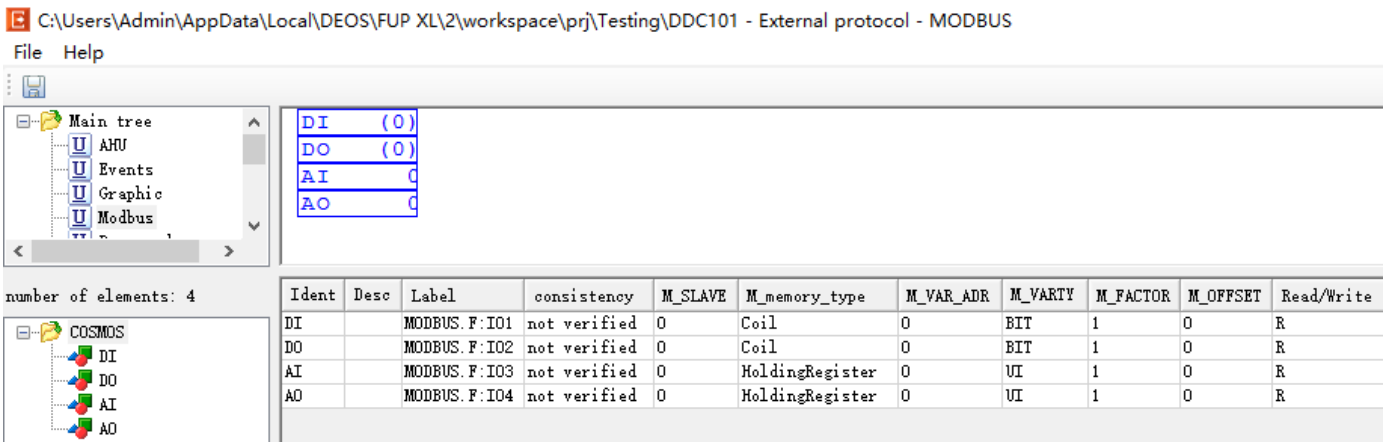
5. In FUP, create a new FUP page called "modbus". Open it and add 4 "Input", 4 "Reference" and link together like below. Change the "Pre-text" and set the "Type" to "Bit" and "UI" respectively. Change the HTML page title to "Modbus". Save and close it



6. Click the controller, right click, select "System Integration", "Modbus"

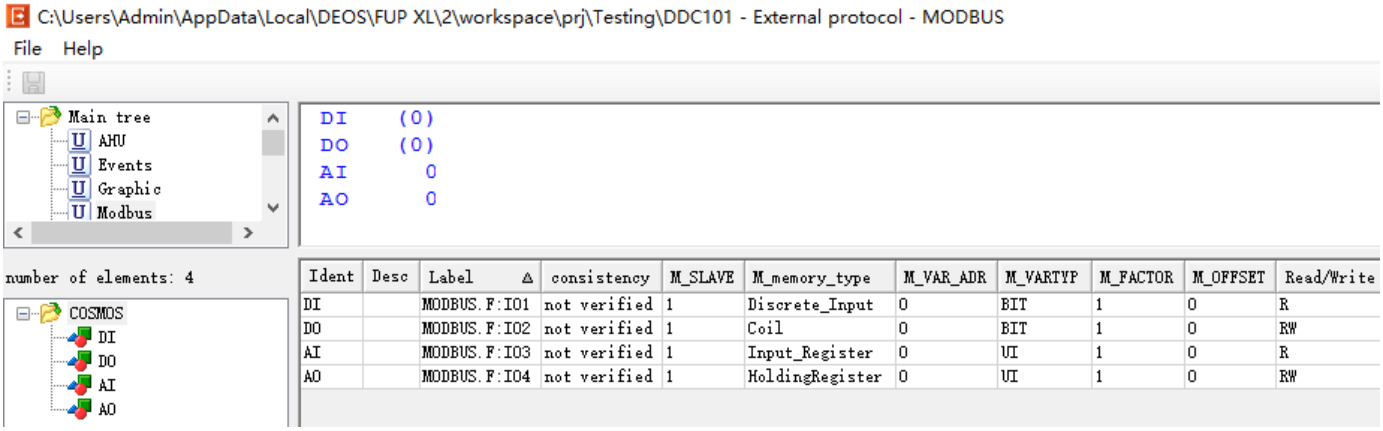


7. Click on the “Modbus” HTML page, drag and drop the 4 points to the below table



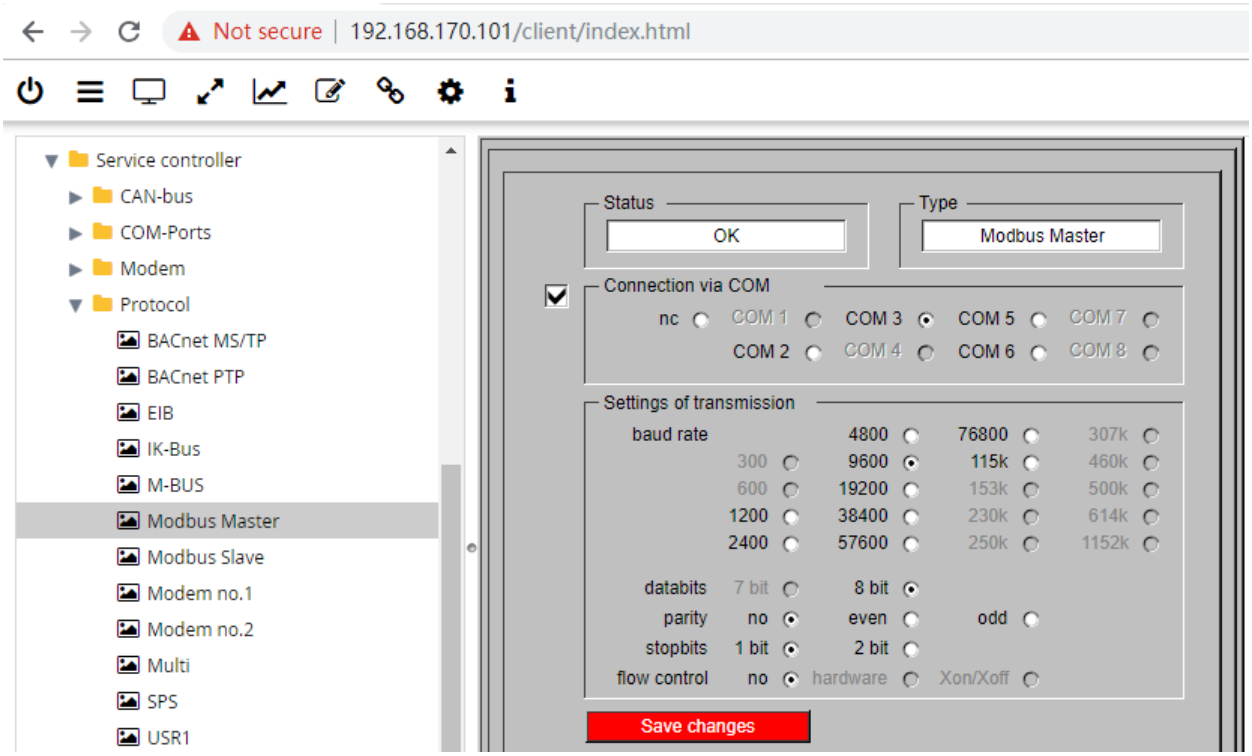
Ident	Desc	Label	consistency	M_SLAVE	M_memory_type	M_VAR_ADR	M_VARTY	M_FACTOR	M_OFFSET	Read/Write
DI		MODBUS.F:IO1	not verified	0	Coil	0	BIT	1	0	R
DO		MODBUS.F:IO2	not verified	0	Coil	0	BIT	1	0	R
AI		MODBUS.F:IO3	not verified	0	HoldingRegister	0	UI	1	0	R
AO		MODBUS.F:IO4	not verified	0	HoldingRegister	0	UI	1	0	R

8. First, change all the “M_SLAVE” to 1, this is the Modbus device ID. In Modbus, there are 4 types, “Discrete Input”, “Coil”, “Input Register” and “Holding Register”. Normally, they’re corresponding to “DI”, “DO”, “AI” and “AO” in our controller (but not always)

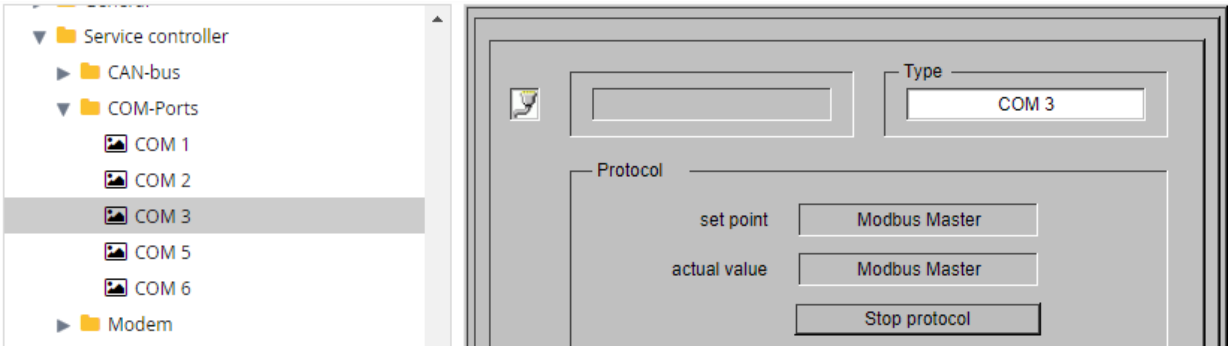


Ident	Desc	Label	consistency	M_SLAVE	M_memory_type	M_VAR_ADR	M_VARTYP	M_FACTOR	M_OFFSET	Read/Write
DI		MODBUS.F:IO1	not verified	1	Discrete_Input	0	BIT	1	0	R
DO		MODBUS.F:IO2	not verified	1	Coil	0	BIT	1	0	RW
AI		MODBUS.F:IO3	not verified	1	Input_Register	0	UI	1	0	R
AO		MODBUS.F:IO4	not verified	1	HoldingRegister	0	UI	1	0	RW

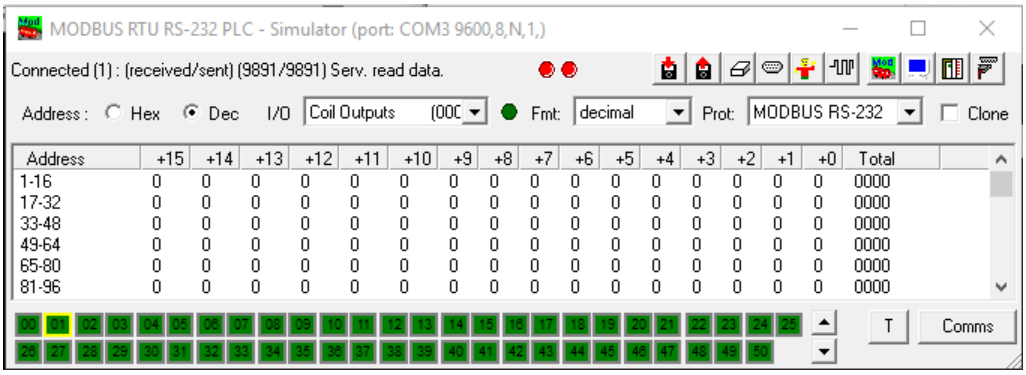
9. “M_VAR_ADR” is the Modbus register address for each point. Change the “Read/Write” to “RW” for DO and AO points. Compile and upload to the controller
10. Start browser and connect to the controller. Select “Service Controller”, “Protocol” and “Modbus Master”. Select the settings below, click “Save Change” and enable it with the ☑



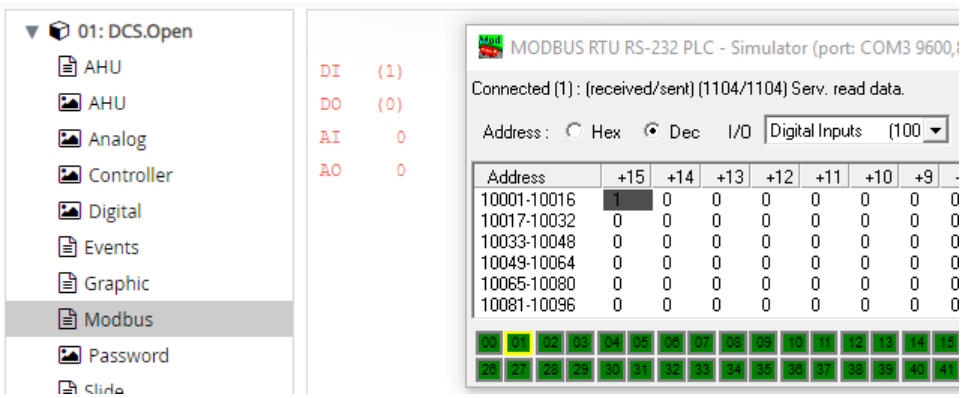
11. Check the settings at “Service Controller”, “COM Ports”, “COM3”. If the setting is not correct, click “Stop Protocol”, and set it again in step 10



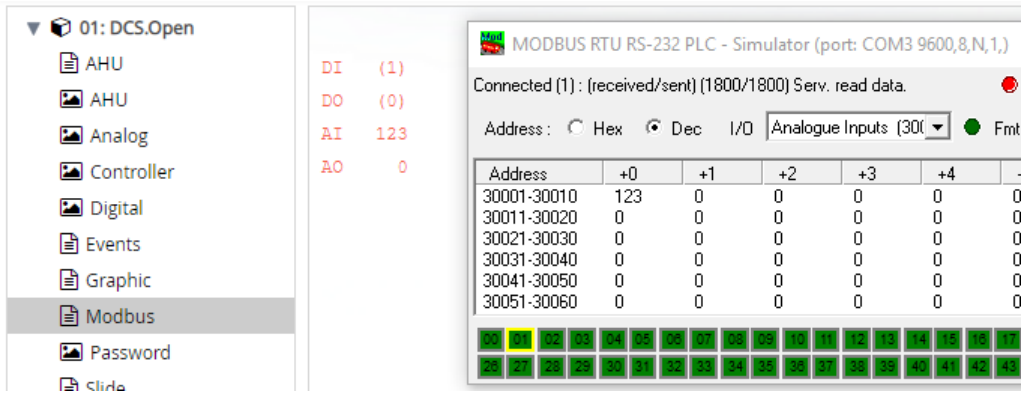
12. If everything OK, then the Modbus communication is started. You can see in the simulation software that the Modbus device ID 01 is communicating (the yellow boarder 01)



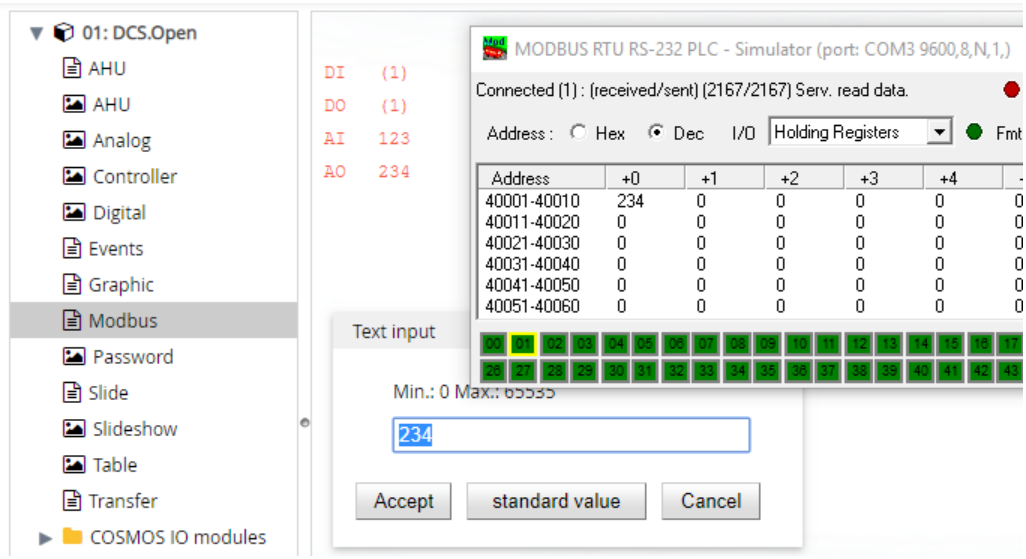
13. Now change the “I/O” to “Digital Inputs”, double click on the first address to change it to 1. Try also for “Coil Outputs”



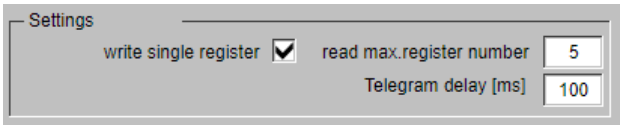
14. Then change the “I/O” to “Analog Inputs”, double click on the first address and change the value to 123. Do the same for “Holding Registers”



15. For DO, and AO, you can also change them in the controller, and you will see the value change in the simulation software



16. There are some settings for Modbus communication in the “Modbus Master” page



17. “Write Single Register” is for Modbus device that does not support Modbus function 15 and 16 (Write Multiple). Since most Modbus devices do not support this function, it’s better to tick this option for all projects
18. “Read Max. Register Number” is that maximum number of points that OPEN 600 can read in 1 Modbus command. Some Modbus devices have limit on this, so you can try to reduce it for a smaller number (e.g. 1 or 2) for testing if cannot read
19. “Telegram Delay (ms)” is the time to wait before sending the next Modbus command in OPEN 600. “100” here means 0.1 second. You can change it to a smaller number if you want faster communication, but some devices maybe cannot response too fast