# RECORDER

# DAS240
# MODBUS TCP Interface

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# 1. MODBUS TCP Server (Slave)

MODBUS is a non-proprietary communication protocol. All MODBUS frames are encapsulated into Ethernet frames: it is called MODBUS over TCP/IP.

That protocol is dialog based (question-answer) : the client (master) send a command, and then the server (slave), send back wanted data.
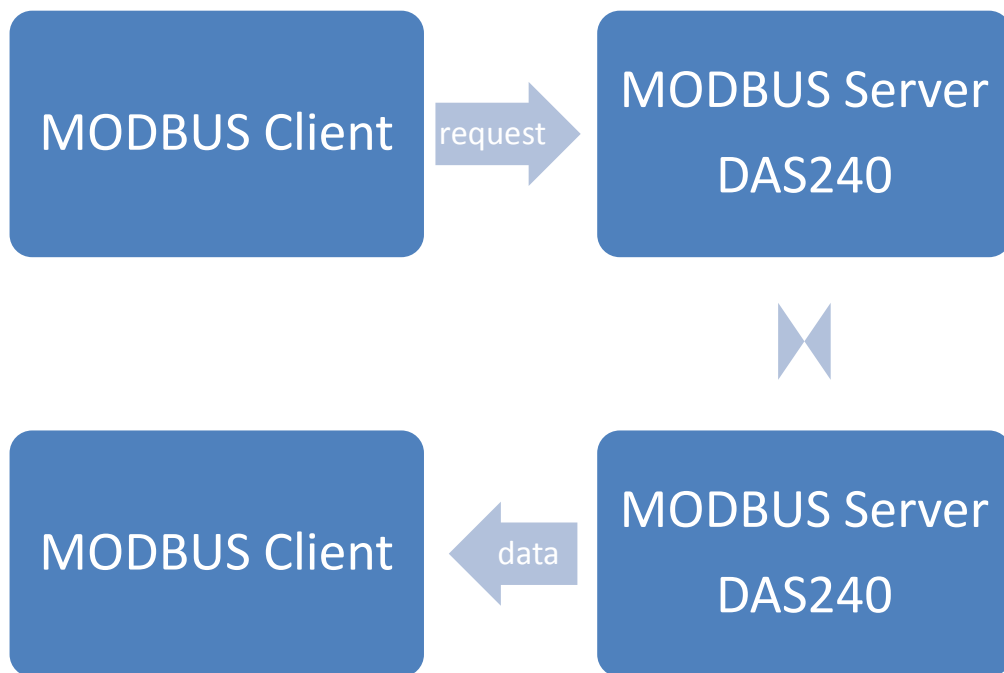


*Pic. 1: MODBUS TCP command diagram*

Your instrument Sefram DAS240 includes a MODBUS TCP Slave service.

For more explanations about MODBUS protocol, please read the following link:
http://www.modbus.org/docs/Modbus_Messaging_Implementation_Guide_V1_0b.pdf

## 2. Setup DAS240

The MODBUS protocol uses ethernet network. So you have to choose the port used for that feature, and then enable the MODBUS TCP server.
Default port for MODBUS TCP is 502.

⚠️ Your Sefram DAS240 includes a WiFi interface: for performance reasons, you should always use the wired ethernet interface when you perform MODBUS communication.

In the 🔧 Setup page of your instrument, then ➕ Additional option, select the "Modbus TCP Server" button.

The setup window for configuring the MODBUS TCP server should be the following picture:
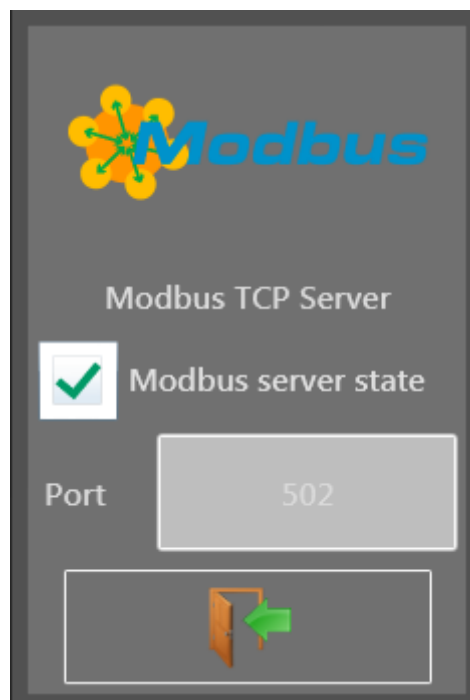


*Pic. 2: Setup window to configure the MODBUS TCP Server on DAS240*

You could enable or disable the server: click on the radio button « Modbus server state ».
According to your preferences, you are able to change the network port dedicated to the Modbus server. To carry out that change to a successful conclusion, you must disable the Modbus server, change the port (502 by default), and then restart the Modbus server.

# 3. Mapping MODBUS TCP

Your Sefram DAS240 instrument share acquisition data in input registers (0x04) and discrete inputs (0x02).

**Analog data :**

Acquisition data for the 200 analogs channels, and 4 logicial functions channels (K1 to K4) are located in inputs registers from the following address : 0x08.

Input Registers

| | |
|---|---|
| 0x08 | A1 High word |
| 0x09 | A1 Low word |
| 0x0A | A2 High word |
| 0x0B | A2 Low word |
| … | … |
| 0x19F | K4 High word (channel n° 204) |
| 0x1A0 | K4 Low word |

An input register contains 16 bits, and each channel value is represented as a float (32 bits).

So, to read one channel, you should read two input registers.

Example : Input A1 from address 0x08 to 0x09
At address 0x08 : -16460 (16 bits)
At address 0x09 : 28160 (16 bits)
Value in float : -1.40961 (32 bits)

**Logical data :**

Logical values about the 12 logical channels are located in the discrete inputs from the address 0x08.

Discret Inputs

| | |
|---|---|
| 0x08 | DI1 |
| … | … |
| 0x14 | DI12 |