# Customized Modbus – Master protocol RTU

Driver Documentation

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# Sommario

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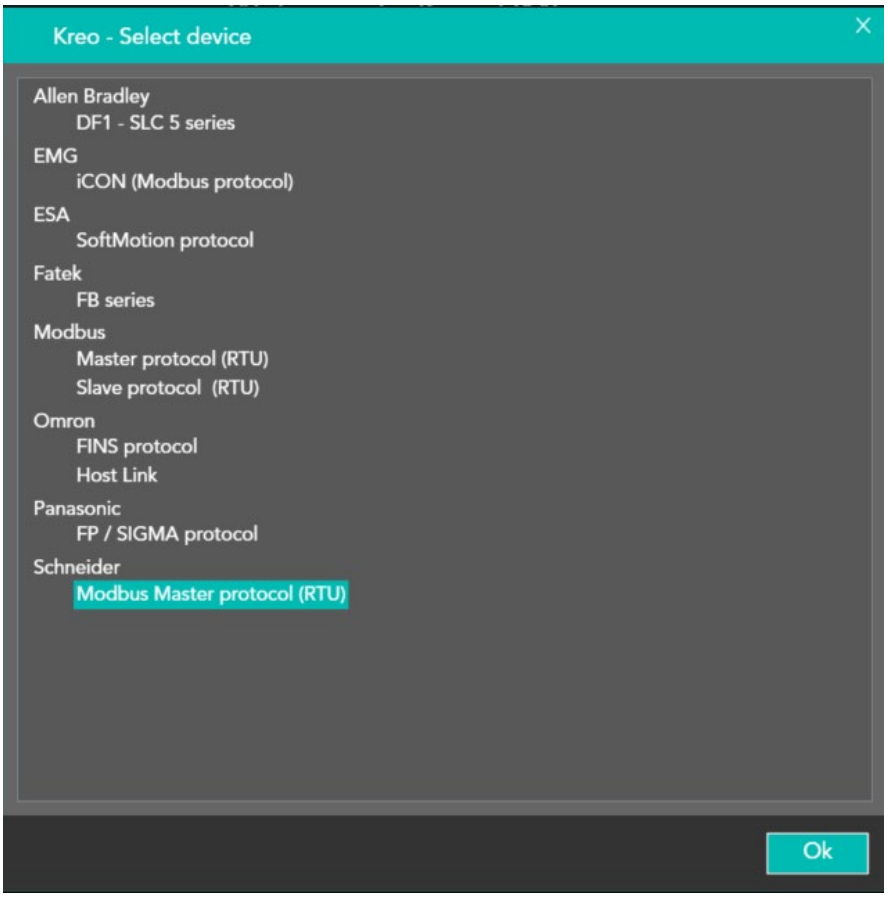
# Document description

This document is dedicated to the programming and functionality of the Schneider Modbus master RTU driver on RS232 – RS485 serial port.
The operator panel in this configuration behaves like Modbus Master (CLIENT) and sends read-write requests to the Schneider PLC slaves configured in the project.

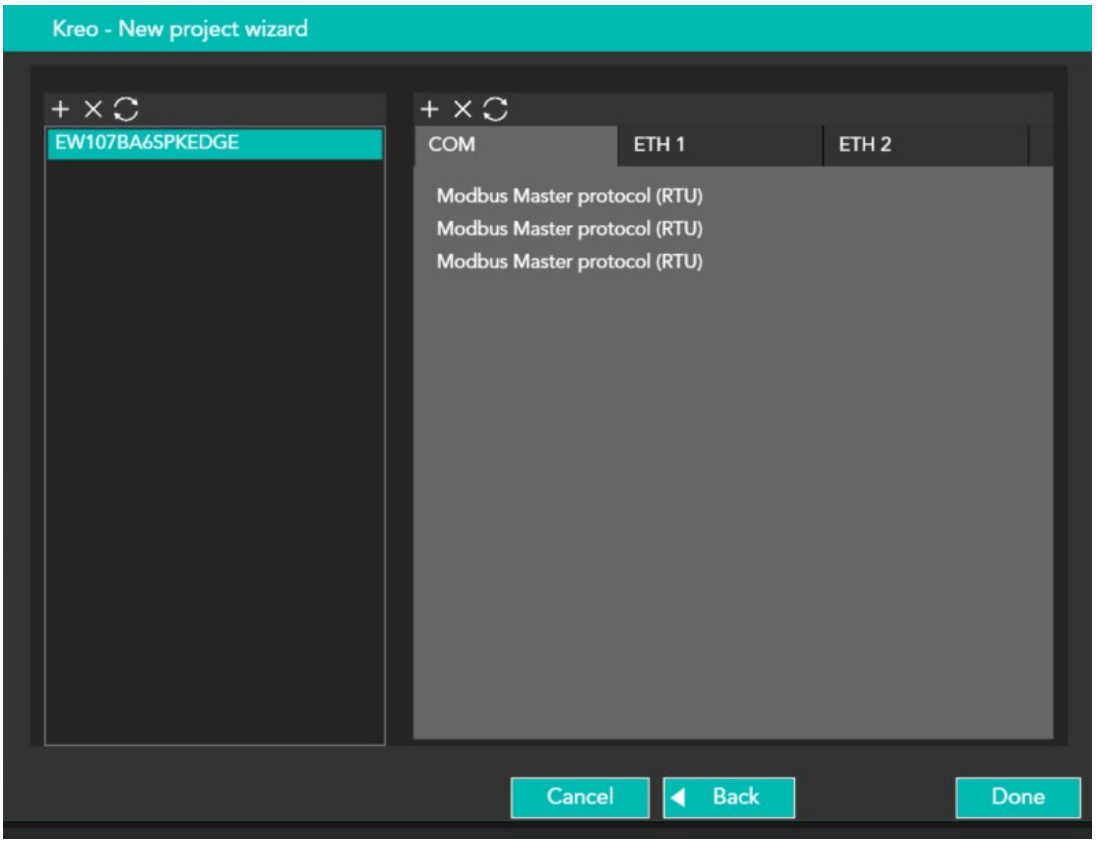
It is possible to define a configuration that provides for the presence of multiple PLCs on the network simply by inserting multiple instances of the Schneider Modbus master driver.
Each instance represents the connection with a PLC.

# Driver Selection



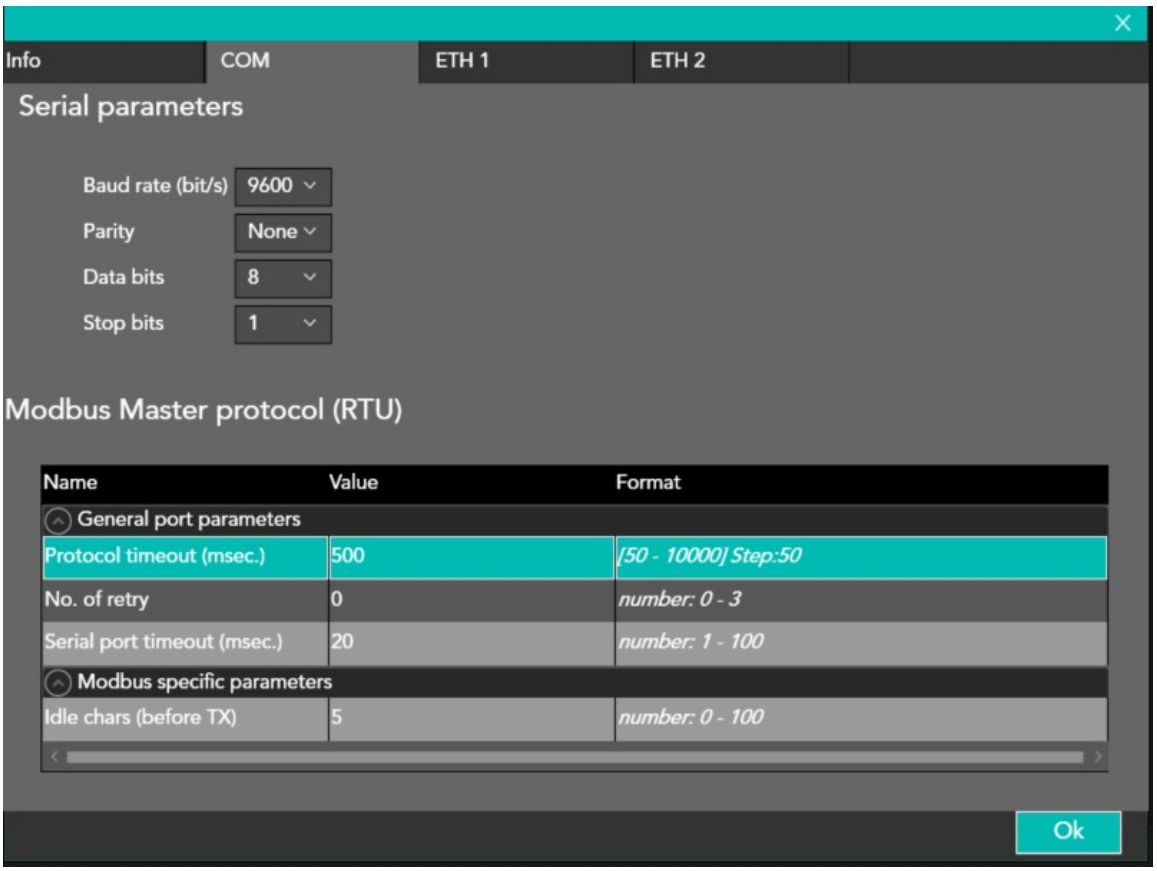

In the Kreo HMI drivers portfolio, select Schneider – Modbus Master protocol (RTU).

Using the + button you can insert multiple instances of the driver for communication with multiple PLCs.
For example, if you have to plan to exchange data with 3 PLCs, it is necessary to instantiate the driver 3 times.



# Communication parameters

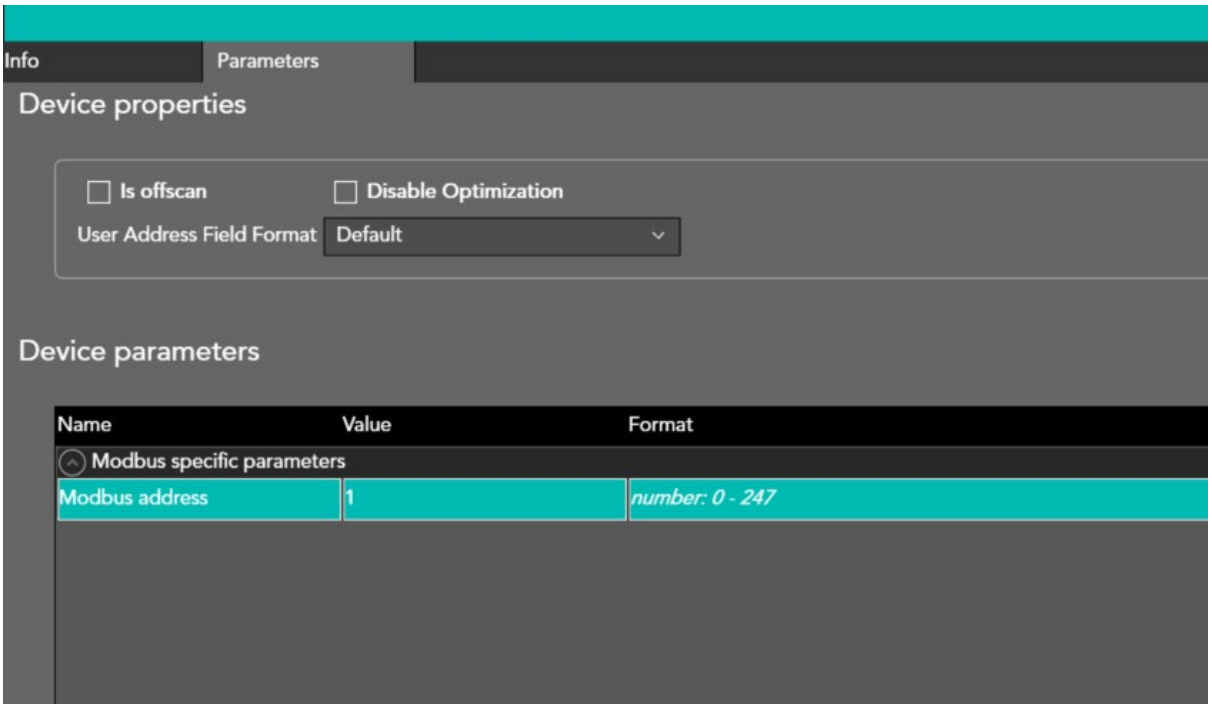
Double-clicking on the HMI model displays the following page:




| | |
|---|---|
| Serial parameters | Baud rate, parity, Data bits and stop bits are the parameters necessary to define the communication speed on the serial port.<br>They are valid for both communication via RS232 and RS 485.<br>The selection of the type of communication is automatic and based on the type of cable used. |
| Protocol Time Out (msec) | Protocol Time Out.<br>Maximum wait value before driver reports a device response timeout error |
| No. of retry | Number of communication attempts (with error) before forcing the communication driver into error mode |
| Serial port time out | Low level time out (serial port).<br>Identifies the maximum time that can elapse between one byte and its next within a device response message, after which the end of the message is identified |

| | |
|---|---|
| Idle char (before TX) | Allows you to insert a delay (such as number of characters) before sending the message.<br>This delay is necessary to give time to the slaves (very slow) to turn the direction of the serial port in the case of RS485 communication. |

Double-clicking on the communication driver displays the Schneider PLC side communication parameters.



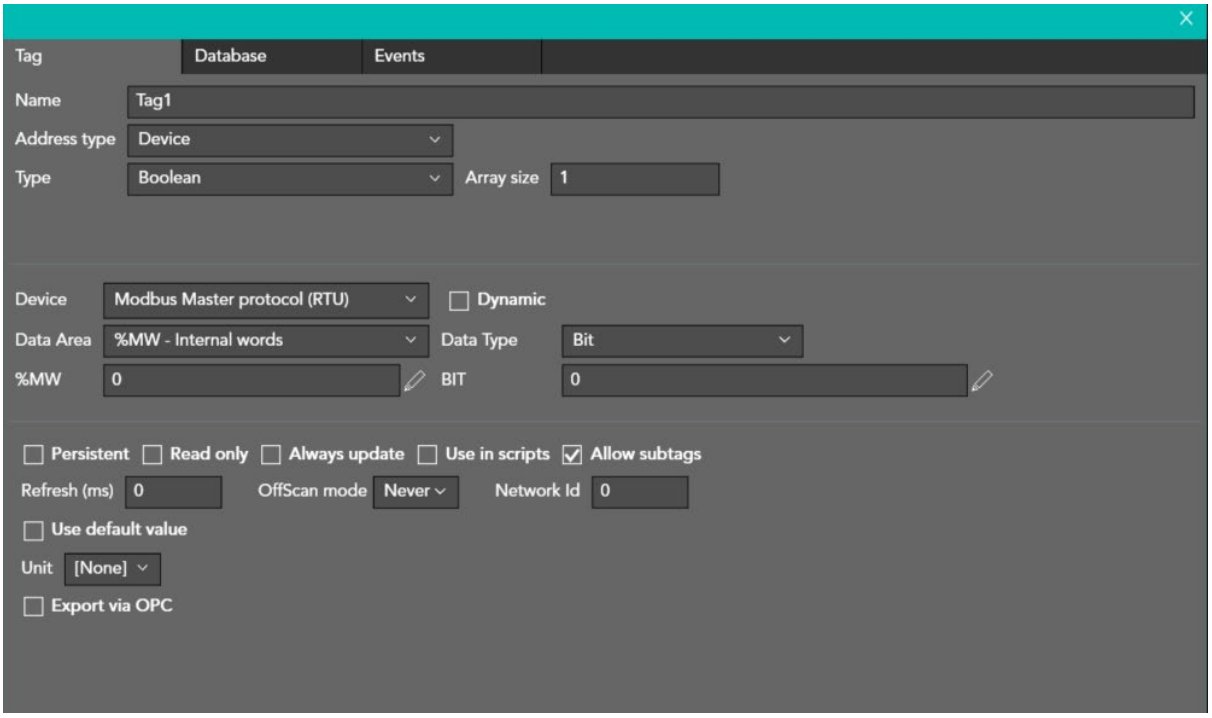

| | |
|---|---|
| Modbus address | Address of the Modbus slave managed by this instance of the communication driver. |

**Offscan**
Offscan management can be used if a machine module is part of the Kreo HMI application but is not physically connected.

A device NOT CONNECTED but in ONSCAN state heavily reduces the performance of the product since the continuous communication timeouts slow down the execution of the functions of requests that follow.

**Disable optimization:**
This option can be used to identify what data displayed on a specific page is causing the communication error.
This value will not be displayed but a series of ????? allows the user to easily identify this Tag.

# Programming a Tag




Addressing is physical based on thememory areas accessible within the  PLC data area.

# Memory areas

| AREA | GUY | DIM. | R/W | DESCRIPTION |
|---|---|---|---|---|
| %M – Internal bits | Bit | 1 | R/W | Reads/ writes multiple optimized bits on the page in one message (FC01/05) |
| %MW – Internal words | WordDwordRealString | 16323216 (2 char) | R/W | Reads/writes multiple optimized 16bit logs on the page in one message (FC03/16) |
| %MX – Internal words | Bit | 1 | R/W | Reads/writes multiple bits to optimized 16bit registers on the page in one message (masked FC03/16) |
| %IX – Input bits | Bit | 1 | R/- | Reads multiple optimized input coils on the page in a single message (FC02) |
| %IW – Input words | WordDword | 1632 | R/- | Reads multiple optimized 16bit input logs on the page in a single message (FC04) |
| %QX – Output bits | Bit | 1 | R/W | Reads/writes multiple optimized bits on the page in one message (FC01/05) |

# Error codes

| *CODE* | *DESCRIPTION* |
|---|---|
| PROTOCOL ERROR | Generic error of receiving data from PLC (wrong message) |
| PROTOCOL TIMEOUT | Timeout error, there was no response to a data request |
| PROTOCOL OFFLINE | Device not connected, cannot open a communication |
| TRANSMISSION ERROR | Driver serial packet transmission error |
| ERROR | Unmanaged Driver Error Reporting |

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