

Customized Modbus – Master protocol RTU

Driver Documentation

Connect Ideas. Shape solutions.



Sommario

Document description	3
Driver Selection	3
Communication parameters	5
Programming a Tag	8
Memory areas	9
Error codes	



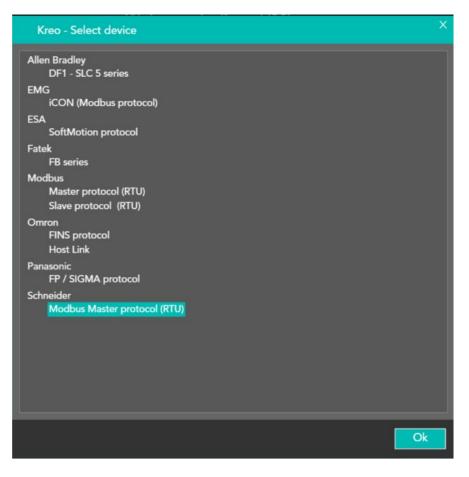
Document description

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

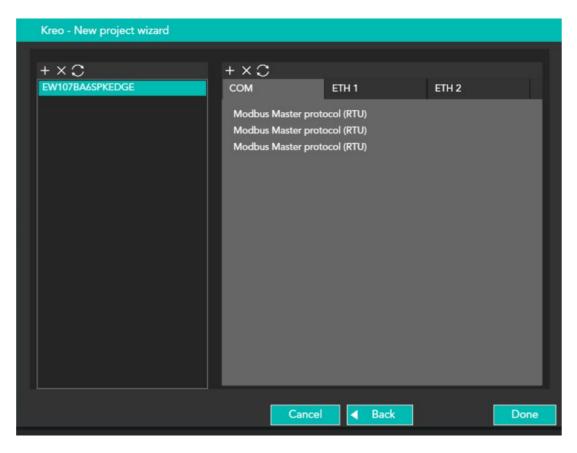


In the Kreo HMI drivers portfolio, select Schneider – Modbus Master protocol (RTU).



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:

				×
nfo	сом	ETH 1	ETH 2	
Serial paramet	ers			
Baud rate (bit	t/s) 9600 ~			
Parity	None \vee			
Data bits	8 ~			
Stop bits	1 ×			
Modbus Master	r protocol (l	RTU)		
Name	•	alue	Format	
	Va		Format	
Name	Vaparameters		Format [50 - 10000] Step:50	
Name 🔿 General port p	Vaparameters	alue 00		
Name O General port p Protocol timeout	Vaparameters (msec.) 5 0	alue 00	[50 - 10000] Step:50	
Name Control General port port Protocol timeout No. of retry Serial port timeout Control Modbus species	V: parameters (msec.) 5 0 ut (msec.) 2 fic parameters	alue 00	[50 - 10000] Step:50 number: 0 - 3 number: 1 - 100	
Name Constraint of the second	V: parameters (msec.) 5 0 ut (msec.) 2 fic parameters	alue 00	[50 - 10000] Step:50 number: 0 - 3	
Name Control General port port Protocol timeout No. of retry Serial port timeout Control Modbus species	V: parameters (msec.) 5 0 ut (msec.) 2 fic parameters	alue 00	[50 - 10000] Step:50 number: 0 - 3 number: 1 - 100	
Name Control General port port Protocol timeout No. of retry Serial port timeout Control Modbus species	V: parameters (msec.) 5 0 ut (msec.) 2 fic parameters	alue 00	[50 - 10000] Step:50 number: 0 - 3 number: 1 - 100	

Serial parameters	Baud rate, parity, Data bits and stop bits are the parameters necessary to define the communication speed on the serial port.
p	They are valid for both communication via RS232 and RS 485.
	The selection of the type of communication is automatic and based on the type of
	cable used.
Protocol	Protocol Time Out.
Time Out	Maximum wait value before driver reports a device response timeout error
(msec)	
No. of retry	Number of communication attempts (with error) before forcing the
	communication driver into error mode
Serial port	Low level time out (serial port).
time out	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	Allows you to insert a delay (such as number of characters) before sending the
(before TX)	message.
	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.

Info		Parameters			
De	vice propert	ies			
	🗌 Is offscan		🗌 Disab	ole Optimization	
	User Address F	ield Format	Default		×
D -					
De	vice parame	ters			
1	Name	_	Value		Format
	Modbus spece	cific paramete	rs		
	Modbus address		1		number: 0 - 247

Modbus	Address of the Modbus slave managed by this instance of the communication
address	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

				×
Тад		Database	Events	
Name	Tag1			
Address type	Devic	e	~	
Туре	Boole	an	 Array size 	1
-				
Device N	lodbus	Master protocol (RTU)	V Dynamic	
Data Area 🖇	MW - I	nternal words	✓ Data Type	Bit ~
%MW 0			🖉 ВІТ	0
		ead only 🔲 Always up		
Refresh (ms)	0	OffScan mode	e Never ∽ Netwo	rk ld 0
🗌 Use defa	ult value	2		
Unit [None	~			
🗌 Export vi	a OPC			
Persisten Refresh (ms) Use defai Unit [None]	t 🔲 R O ult value	OffScan mode	odate 🔲 Use in scripts	

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



Connect ideas. shape solutions.

ESA S.p.A. | www.esa-automation.com |