

## Schneider Modbus – Master protocol TCP

Driver documentation

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## Document description

This document is dedicated to the functionalities and programming of the Schneider Modbus master TCP driver.

In this configuration the HMI acts as Modbus master (Client) and sends the read and write requests to the Schneider PLC (Modbus slave) defined in the Kreo HMI configuration.

The user can setup a Modbus network configuration with several Modbus slaves simply adding different instances of the Schneider modbus master driver. Each instance is dedicated to the communication with a specific slave.

## Driver selection

Kreo - Select device	×
Beckott TwinCAT ADS protocol	^
ESA Codesys SoftPLC (for generic PLC)	
SoftMotion protocol (TCP)	
Fatek FB series	
Modbus Master protocol (TCP) Slave protocol (TCP)	
Omron Ethernet/IP (NJ-NX series) FINS protocol (TCP) FINS protocol (UDP)	
Schneider M series PLC Codesys based Modbus Master protocol (TCP)	
Siemens Industrial ethernet protocol (LOGO! Cpu 0AB7) Industrial ethernet protocol (LOGO! Cpu 0AB8) Industrial ethernet protocol (S7-1200 cpu) Industrial ethernet protocol (S7-1200 symbolic) Industrial ethernet protocol (S7-200 Smart cpu) Industrial ethernet protocol (S7-3/400 cpu)	ļ
	Ok

In the Kreo HMI driver portfolio select Schneider – Modbus Master protocol (TCP)



The user can add several instances of the Modbus Master driver via the add button (+) displayed below.

In case 3 slaves have to exchange the data with the Modbus master it is mandatory to add 3 different instances of the driver.





# Communication parameters

The page below is displayed by double clicking on the HMI model

Info	ETH 1	ETH 2		
Ethernet parar	neters			
IP address 19	92.168.0.1			
Subnet mask 2	55.255.0.0			
Ping timeout 5	00 ms	~		
Modbus Maste	er protocol (Te	CP)		
Name	Valu	le	Format	
General port	t parameters			
Protocol timeou	t (msec.) 500		[50 - 10000] Step:50	
No. of retry	0		number: 0 - 3	
<	_	_		>

IP address	Ip address of the HMI port
Subnet mask	Subnet mask of the HMI port
Ping timeout	The PING command is sent in order to test the connection stability
Protocol	The PLC has to reply before this time out window will expire in order not to have
Timeout	communication error
No. Of retry	Number of retry before having the communication error



The page below is diplayed by double clicking over the communication driver

				X
Info	Parameters			
De	vice properties			
	S offscan	Disable Optimization		
	User Address Field Format	Default	<b>~</b>	
De	vice parameters			
	Name	Value	Format	
	Tcp/IP settings			
	IP address	0.0.0	IP address: 0.0.0.0 - 255.255.255.255	
	IP port	502	number: 0 - 65535	
	Modbus specific parameter	ers		
	Modbus address	1	number: 0 - 247	
			Ok	

Is Offscan	The driver is defined in the project but will not be scheduled. In order to enable the driver it is mandatory to use the ST script function: TAG_SETOFFSCANDEV (device, state) TAG_SETOFFSCAN (Tag, state)
Disable the	Disable the data optimization.
optimization	Each tag will be refreshed with a separate communication message.
User address	Tag address format.
field format	The default format is defined in the driver description but the user can select
	the desired format (DECIMAL or HEXADECIMAL)
Ip address	Ip address of the PLC port
lp port	Communication port
	The default value is 502
Modbus	Slave PLC address.
address	In case of several instances of the communication driver each instance must
	have a different slave address



#### IsOffscan

Is offscan management can be used in case a specific machine module will be part of the Kreo HMI project but will not be physically connected.



A NOT CONNECTED and ONSCAN device will reduce dramatically the performance of the page refresh due to the communication timeout.

#### **Disable Optimization:**

This option can be used in order to identify wich of the data displayed on a specific page is causing the communication error.

The value will not be displayed but a series of ????? will let the user identify the faulty tag to be fixed.



# Tag programming

							×
Tag		Transformations	Thresholds	Database	Events		
Name	Tag1						
Address type	Devic	e	~				
Туре	Unsig	nedinteger	<ul> <li>Array size</li> </ul>	1			
Device N	Nodbus	Master protocol (TCP)	V Dynamie				
Data Area 🦻	6IW - In	put words	<ul> <li>Data Type</li> </ul>	Word	✓ □ BCD	Signed	
%IW 0			Ø				
Persisten	t 🗌 R	ead only 🗌 Always up	pdate 🔲 Use in script	s 🔽 Allow subtags [	Tag OPC		
Refresh (ms)	0	OffScan mode	e Never ∽ Netwo	ork Id 0			
Use defa	ult valu	8					
Unit	[None	e] ~					
							Ok

The Tag address is based on the PLC memory areas.



# Memory areas

AREA	τιρο	DIM.	R/W	DESCRIZIONE
%M – Internal bits	Bit	1	R/W	Read/Write of a block of consecutive coils via a single message (FC 01/05)
%MW – Internal words	Word Dword Real String	16 32 32 16 (2 char)	R/W	Read/Write of a block of consecutive holding registers via a single message (FC03/16)
%MX – Internal words	Bit	1	R/W	Read/Write of a block of consecutive holding registers via a single message (FC03/16)
%IX – Input bits	Bit	1	R/-	Read of a block of consecutive coils via a single message (FC02)
%IW – Input words	Word Dword	16 32	R/-	Read of a lock of consecutive Input registers via a single message (FC04)
%QX – Output bits	Bit	1	R/W	Write of a block of consecutive coils via a single message (FC01/05)



# Error codes

CODICE	DESCRIZIONE
PROTOCOL ERROR	Generic error. The message received from the slave is not correct
PROTOCOL TIMEOUT	Timeout error. No reply from the slave before the time out window has expired
SOCKET ERROR	The ethernet socket cannot be opened
TRANSMISSION ERROR	Transmission error of the TCP message
ERROR	Generic error



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