

## ESA – OPC UA client Connection with a generic OPC-UA server

Driver documentation

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## Document description

This document is dedicated to the programming and functionality of the generic OPC UA client driver included in the Kreo HMI driver portfolio.

This driver allows connection with a generic server compliant with the OPC-UA standard. The server must be accessible via a network connection (physical or virtual)

## Driver selection

Allen Bradley Ethernet/IP (CompactLogix series) Ethernet/IP (ControlLogix series) Ethernet/IP (Micro800 series) Ethernet/IP (MicroLogix series) Beckoff	
ESA Codesys SoftPLC (for generic PLC) OPC UA client SoftMotion protocol (TCP) Straton SoftPLC Web server	
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)	

In the HMI driver portfolio select ESA – OPC UA client.



## Communication parameters

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

			X
Info	ETH 1	ETH 2	
Ethernet par	rameters		
IP address	192.168.0.1		
Subnet mask	255.255.0.0		
Ping timeout	500 ms	~	
			Ok

IP address	IP address of the HMI connected to the OPC UA server
Subnet mask	Subnet mask of the HMI port connected to the OPC UA server
Ping timeout	The PING command is sent in order to check the connection stability



The page below is displayed by double clicking on the communication driver.

				×	
Info		Parameters	OPC UA		
De	vice proper	ties			
	Soffscan	Disa	ble Optimization		
	User Address	Field Format Default		~	
De	vice parame	eters			
	Name	Value		Format	
	OPC Client s	pecific parameters			
	Server address	opc.tcp	://servername		
	Server port	48010		0 - 65534	
	Username				
	Password				
	Use security	Yes			
	Connection time	out 5000		[100 - 20000] Step:100	
				Ok	ſ

Isoffscan	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	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)
Server address	OPC UA server path.
	Can be totally symbolic or the user can define the Ip address of the PC running
	it.
	opc.tcp://server name
	opc.tcp://Ip address of the computer where the OPC Server is running
Server port	Server communication port
	The default port is: 48010
Username	Server access User Name
	If not necessary this field must be left empty
Password	Server access password.
	If not necessary this field must be left empty



Use security	To be selected in case the server access is protected. A certificate is created automatically and it is sent to the server during the connection procedure. The higher connection security level is automatically selected (based on the Identifica se il server prevede o meno un accesso sicuro. In questo caso viene creato in automatico un certificato che viene inviato al server in fase di connessione. La modalità di connessione è la più sicura tra quelle che il server mette a disposizione.
Connection timeout	Server connection time out

#### 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.



## OPC UA Server Tag tree importing



The Import Tags button displays the complete Tag tree that is coming back via the OPC browsing function.

The user can select wich elements have to be imported in the HMI Tag database.



# Tag definition

Tag		Database	Events				
Name	Tag2						
Address type	Devic	e	~				
Туре	Boole	an	~ Array	size 1			
Device	OPC U	A client	~ 🗌 D	ynamic			டு Get OPC UA tag
Data Area	Addres	s space	∨ Data T	ype	Bool	~	
Namespace			🖉 Identif	ier Type		~	
Identifier							
	. — .						
	t∐R	ead only 📋 Always up	odate 📋 Use in s	cripts	✓ Allow subtags [		
Refresh (ms)	0	OffScan mode	e Never ∨ N	letwork	ld 0		
🗌 Use defa	ult value	e					
Unit	[None	] ~					
							Ok

The Tag definition is totally symbolic, the Tag name is the address.

In case of a Tag belonging to a data structure the Tag name will follow the complete structure path.



## Data Area

AREA	ТҮРЕ	DIM.	R/W	DESCRIPTION
Variable	Bool Sint Int Dint Real LReal LInt ULInt String	1 8 16 32 32 64 64 64 8	R/W	Read and Write access to the PLC area named "Controller Tags" by the predefined format.

- <TagName>:
- <TagName>[X]:
- <TagName>.<ElementName>:

Simple Tag Array element Structure element



## Error Codes

CODE	DESCRIPTION
DRIVER ERROR	The message cannot be delivered.
	Hardware problem
PROTOCOL ERROR	Generic error
PROTOCOL TIMEOUT	The OPC UA server did not reply before the time out window to be expired
PROTOCOL OFFLINE	The TCP/IP connection is not possible
SOCKET ERROR	The ethernet socket cannot be created
TRANSMISSION ERROR	The TCP message cannot be created
ERROR	Unknown error



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