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

Driver documentation

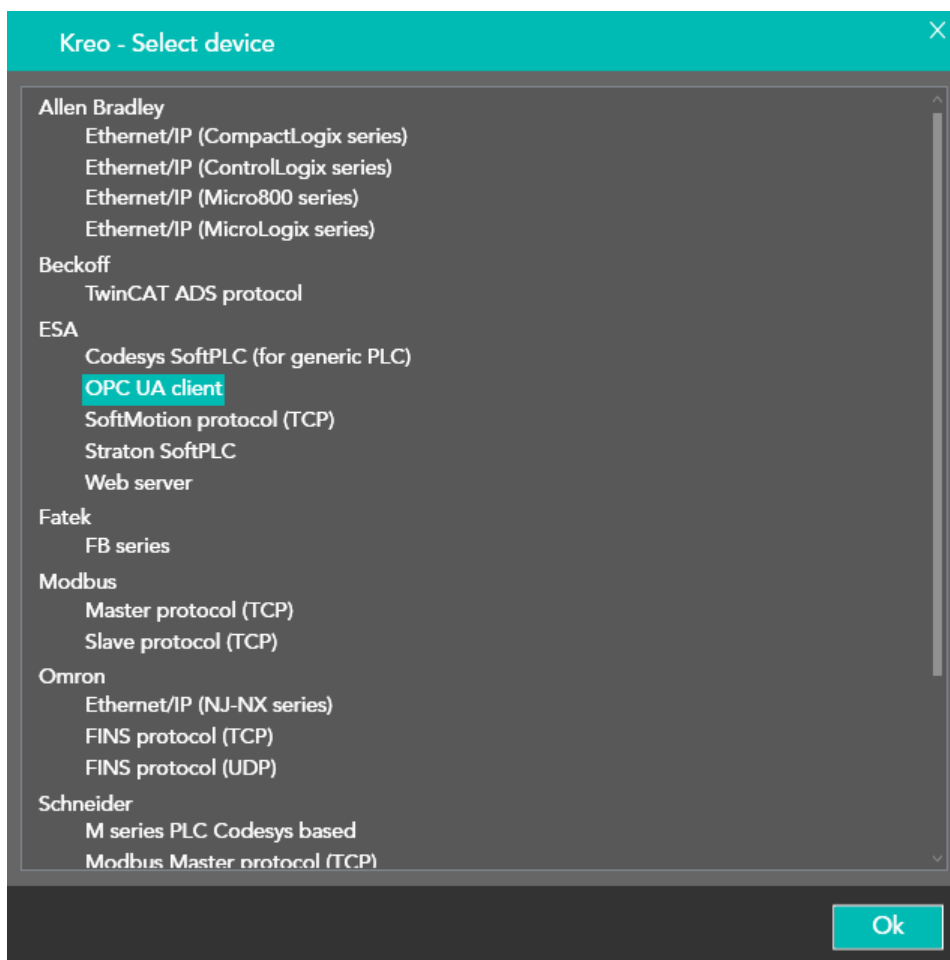Connect
Ideas.
Shape
solutions.

## Table of contents

# 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



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

# Communication parameters

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



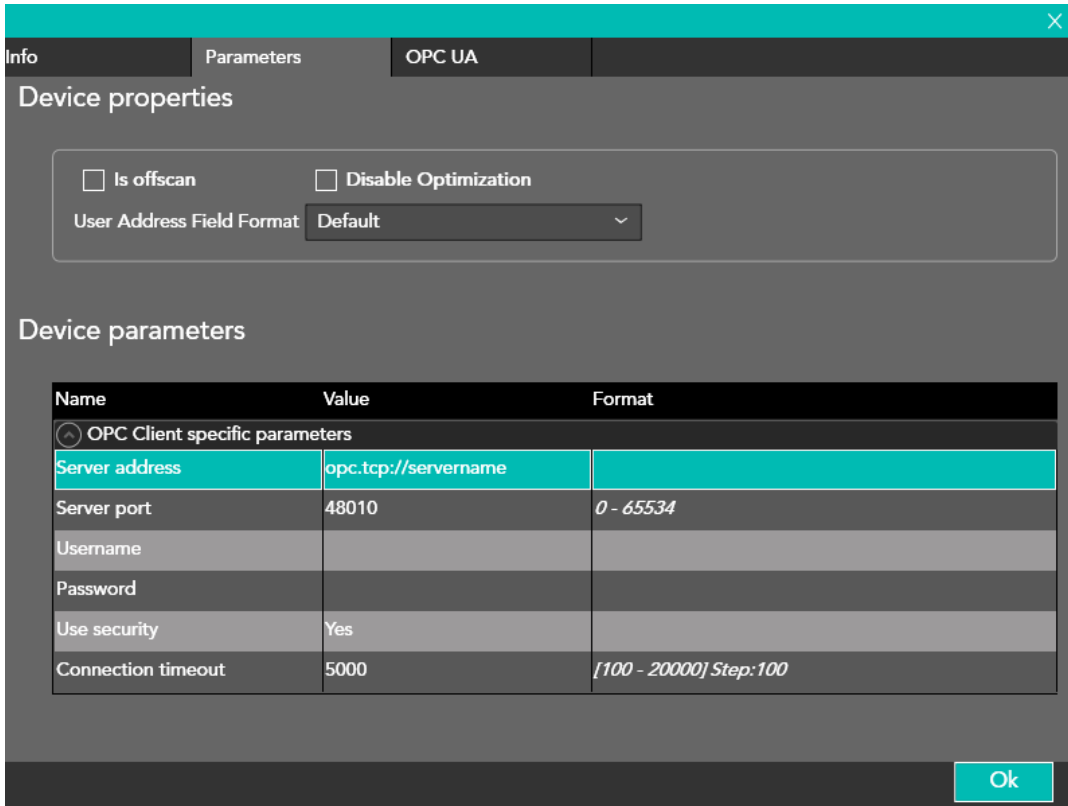| | |
|---|---|
| IP address | IP address of the HMI connected to the OPC UA server |
| Subnet mask | Subnet mask of the HMI port connected to the OPC UA server |
| Ping timeout | The PING command is sent in order to check the connection stability |

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



| | | |
|---|---|---|
| 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 optimization | Disable the data optimization. Each tag will be refreshed with a separate communication message. | |
| User Address Field Format | Tag address 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.
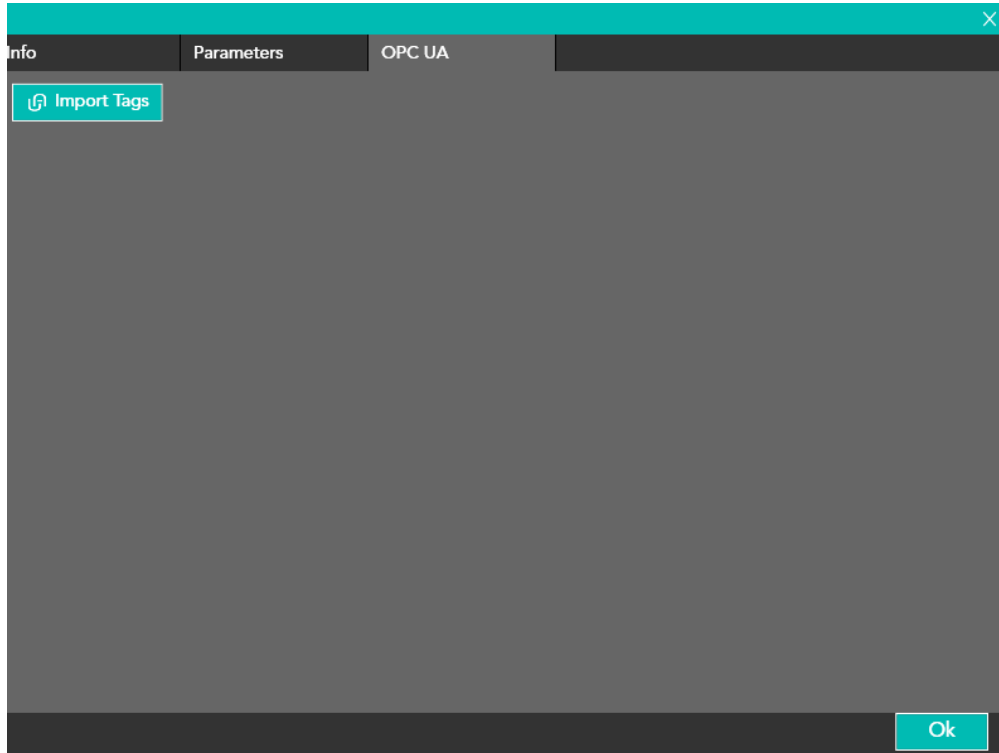
**Disable Optimization:**

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



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

- <TagName>:        Simple Tag
- <TagName>[X]:       Array element
- <TagName>.<ElementName>:  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 |