



ESA PLC Codesys based  
Generic device based on Codesys runtime

Driver Documentation

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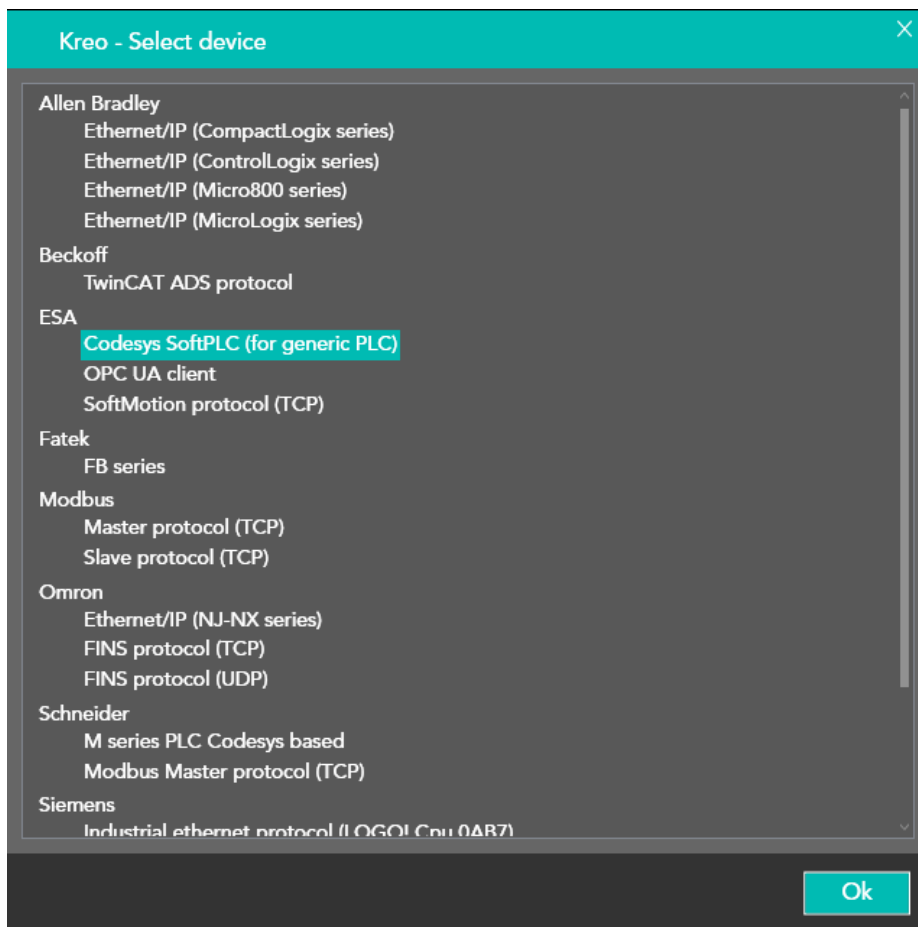


## Document description

This document is dedicated to the programming and functionalities of the ESA Codesys SoftPLC driver (for generic PLC).

This driver can be used to exchange datas with a generic device based on Codesys 3.x runtime.

## Driver selection



In the Kreo HMI driver portfolio select ESA – Codesys SoftPLC (for generic PLC).



## Communication parameters

Double click on the HMI model will display the below pop\_up page.

Info ETH 1 ETH 2

Ethernet parameters

IP address 192.168.0.1

Subnet mask 255.255.0.0

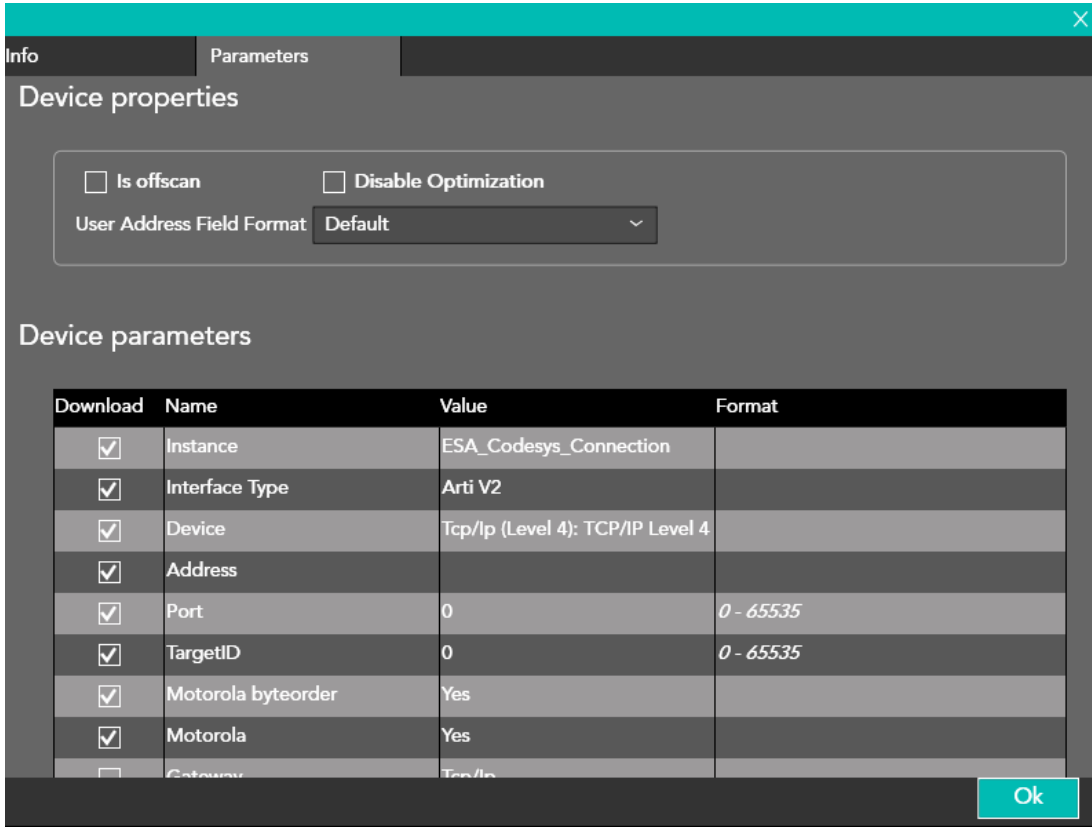
Ping timeout 500 ms

Ok

IP address	Ip address of the HMI port connected to the Micro800 PLC
Subnet mask	HMI port subnet mask
Ping timeout	The PING message is used to check the connection stability



Double click on the communication driver will display the communication parameters on the PLC side.



Is Offscan	The communication driver is not scheduled. In order to enable the communication the user has to force the ST script functions below. TAG_SETOFFSCANDEV (device, state) TAG_SETOFFSCAN (Tag, state)
Disable optimization	The data exchange optimization is disabled. Each Tag is required with a separate message.
User address field format	Tag addressing format. The default one is defined in the driver database configuration but the user can select the preferred one (DECIMAL or HEX). In case of symbolic addressing driver this parameter does not have any effect.
Address prefix	Prefix added to the initial part of the Tag path



### **Offscan**

The Offscan option can be selected in case the machine module is part of the application but is not physically connected.



A device which is NOT CONNECTED but in ONSCAN state will reduce dramatically the data refresh performance.

The timeout error of the communication driver will delay the Tag requests.

### **Disable optimization**

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

The value of this Tag will not be displayed but some '?????' will be displayed in the numeric field.

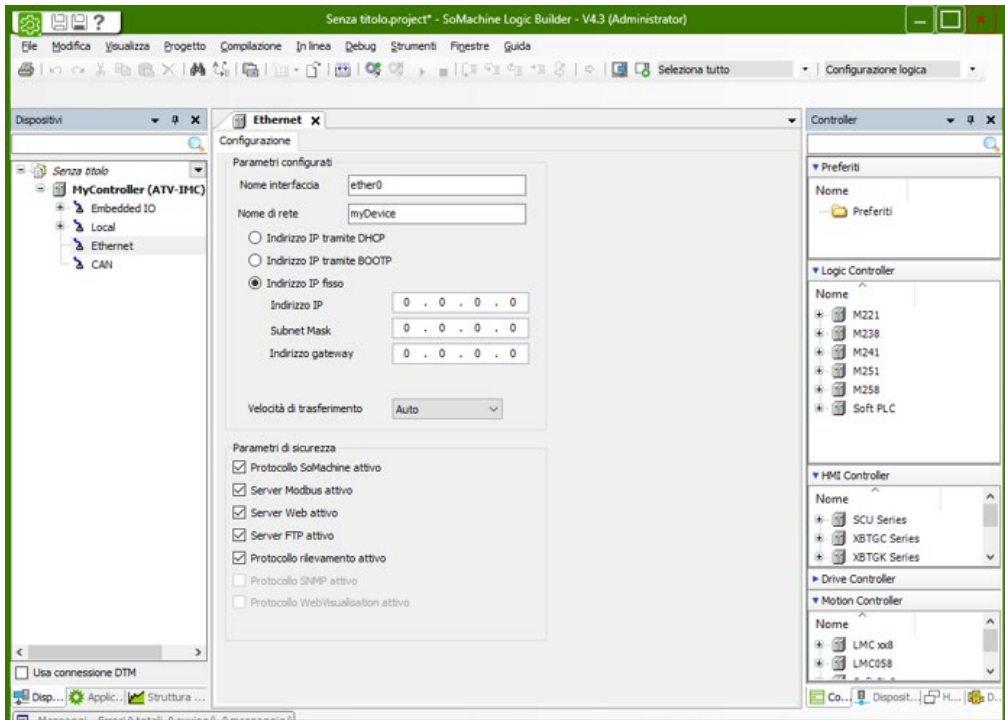


## Codesys parameters configuration list

Download	Name	Value	Format
<input checked="" type="checkbox"/>	Instance	ESA_Codesys_Connection	
<input checked="" type="checkbox"/>	Interface Type	Arti V2	
<input checked="" type="checkbox"/>	Device	Tcp/Ip (Level 4): TCP/IP Level 4	
<input checked="" type="checkbox"/>	Address		
<input checked="" type="checkbox"/>	Port	0	0 - 65535
<input checked="" type="checkbox"/>	TargetID	0	0 - 65535
<input checked="" type="checkbox"/>	Motorola byteorder	Yes	
<input checked="" type="checkbox"/>	Motorola	Yes	
<input type="checkbox"/>	Gateway	Tcp/Ip	
<input type="checkbox"/>	Gateway address		
<input type="checkbox"/>	Gateway port	0	0 - 65535
<input type="checkbox"/>	Gateway password		
<input type="checkbox"/>	NoLogin	1	0 - 1
<input checked="" type="checkbox"/>	Buffersize	0	0 - 65535
<input checked="" type="checkbox"/>	PrecheckIdentity	0	0 - 1

The value of these parameters must be the same of the ones defined in the PLC configuration software.

Here below the SoMachine parameter list.







Parameter	Description
Instance	Parameter set Name
Interface Type	Communication definition between the ESA device and the Codesys based controller. ARTI: the communication is direct. No need of any external Gateway. GATEWAY: the communication is established via an external application (Gateway 3S). The Gateway parameters (Gateway, Gateway address and Gateway port) are mandatory.
Device	Softplc runtime Ip address definition  Tcp/Ip (Level 4): TCP/IP Level 4 Protocol Tcp/Ip (Level 2): TCP/IP Level 2 Protocol Tcp/Ip (Level 2 Route): TCP/IP Level 2 Route Serial (RS232): serial connection
Address	Softplc runtime address (based on the Device definition)
Port	Softplc runtime communication port. The default value is 11740.
TargetID	Legacy devices (ARTIv2, Gatewayv2) runtime Id definition
Motorola byteorder	Mandatory for the legacy devices (ARTIv2, Gatewayv2) PLC byte order.
Motorola	Mandatory for the legacy devices (ARTIv2, Gatewayv2) PLC byte order.
Gateway	Gateway definition type Tcp/Ip if the Gateway is connected via the local LAN Local if both the Codesys runtime and the Gateway are running on the same device
Gateway address	Gateway address
Gateway port	Porta di ricezione del Gateway. Se non indicata viene usata quella comunque predefinita per il Gateway. GATEWAY2: 1210 GATEWAY3: 1217
Gateway password	Gateway password. Mandatory for the legacy devices (Gatewayv2)
NoLogin	Mandatory for the legacy devices
Buffersize	Mandatory for the legacy devices Buffer dimension
PrecheckIdentity	Mandatory for the legacy devices



## Tag definition

The screenshot shows a 'Tag definition' dialog box with the following configuration:

- Name: Tag1
- Address type: Device
- Type: UnsignedInteger
- Array size: 1
- Device: Codesys SoftPLC (for generic PLC)
- Dynamic:
- Data Area: Data memory
- Data Type: Bit
- Variable name: Temperature
- Unit: [None]
- Options:  Persistent,  Read only,  Always update,  Use in scripts,  Allow subtags,  Tag OPC
- Refresh (ms): 0
- OffScan mode: Never
- Network Id: 0

The Tag addressing is totally symbolic.

The Tag name is the address itself.

If the Tag is part of a data structure, the Tag address is the structure complete path.



## Data Area

AREA	TYPE	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 / Write access to the PLC area named Controller TAGs via the predefined format.

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



## Error codes

<b>CODE</b>	<b>DESCRIPTION</b>
DRIVER ERROR	The message cannot be sent HW problem at the port level
PROTOCOL ERROR	Generic error
PROTOCOL TIMEOUT	The HMI did not receive any reply from the PLC inside the time out window
PROTOCOL OFFLINE	The TCP/IP connection cannot be established
SOCKET ERROR	The ethernet socket cannot be created
TRANSMISSION ERROR	The TCP message cannot be created
ERROR	Unknown error



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