Beckhoff – Twincat ADS protocol

Driver Documentation

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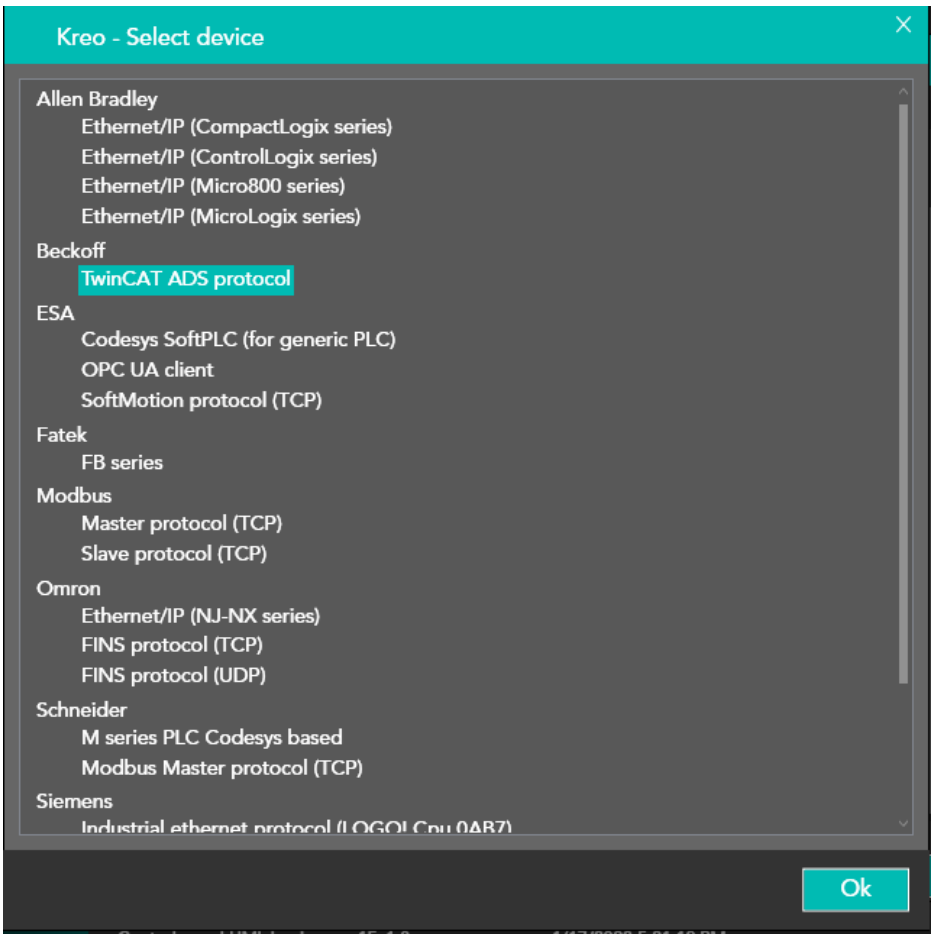
Document description

This document is dedicated to the setting and functionalities of the Beckhoff Twincat ADS driver.
ADS stands for Automation Device Specification and identify the communication protocol between any Twincat device.
This driver is compatible with Twincat 2.x and Twincat 3.x based Beckhoff devices.

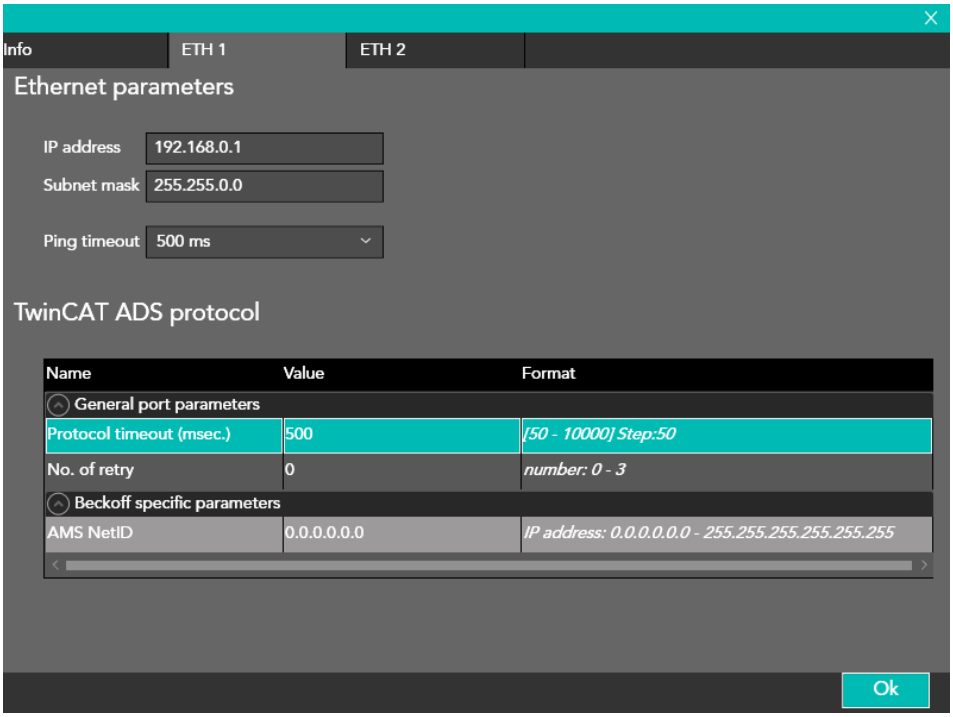
Driver selection



In the Kreo HMI driver portfolio select Beckhoff – Twincat ADS protocol.

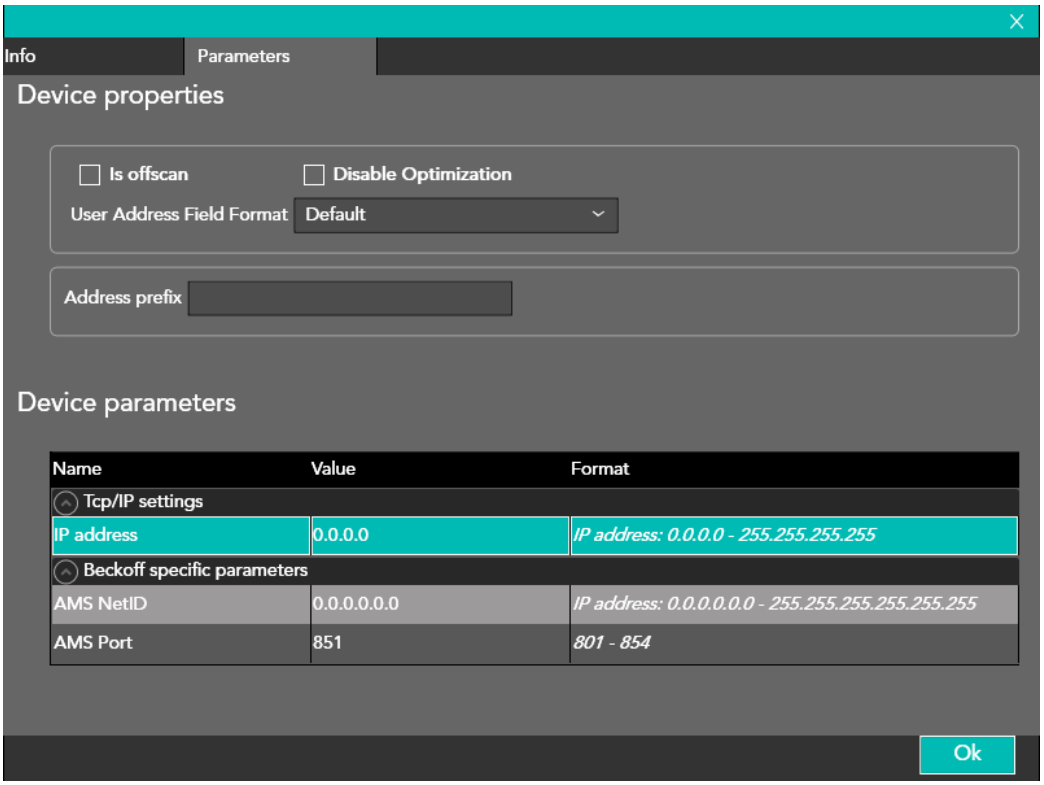
Communication parameters

Double click on the HMI model will display the pop_up page below.



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 check the connection stability
Protocol Timeout	The PLC reply has to arrive inside this time out window
No. Of retry	After these retries (each one with communication error) the HMI itself will be forced in the error status
AMS NetID	Automation Message Specification NetId. HMI extended address

Double click on the communication driver will display the below pop_up window..



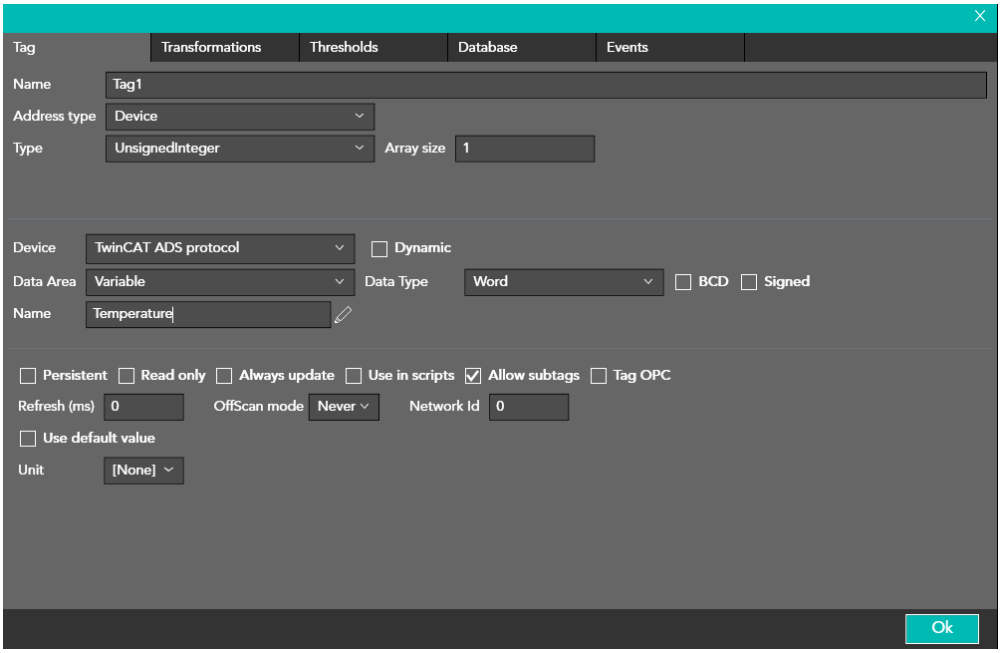
Is offscan	The driver is defined in the project but will not be scheduled. In order to enable the driver it is mandatory to use the ST script function: TAG_SETOFFSCANDEV (device, state) TAG_SETOFFSCAN (Tag, state)
Disable Optimization	Disable the data optimization. Each tag will be refreshed with a separate 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)
Address prefix	Prefix that will be added at the beginning of the Tag addressing string.
IP address	IP address of the PLC port
AMS NetID	AMS identifier of the Beckhoff PLC
AMS port	Communication port

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 definition



The addressing is totally symbolic.
The Tag name is the address itself.
If the Tag is part of a structure the Tag definition is the complete structure 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 and Write access to the PLC area named “Controller Tags” via the predefined format.

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

Error code

CODE	*DESCRIPTION*
DRIVER ERROR	The message cannot be delivered HW problem at communication level
PROTOCOL ERROR	Generic error
PROTOCOL TIMEOUT	The HMI did not get any reply from the controller
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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