EtherCat

straton user guide – Rev. 10

straton

straton

Content

1. Requirements and startup

Both straton IDE 9.0 (or higher) and straton runtime must be installed on your PC.

Ethercat driver runs only on Windows 7 or higher.

To build *.eni files you will have to install one of these three products:

▸ If you are using the straton driver EtherCAT that uses the Beckhoff stack, you will have to install the "EtherCAT configurator" from Beckhoff Automation

▸ If you are using the straton driver EtherCAT that uses the Acontis stack, you will have to install "EC-Engineer" from acontis technologies

▸ If you are using the straton driver EtherCAT that uses the Koenig-pa stack, you will have to install "KPA EtherCAT Studio" from Koenig-pa

Download and install straton products from https://straton-plc.com/telechargements/

1.1.   Download an application

In order to execute an application, you need to start a straton runtime on a platform. Download the application and start it if not started automatically after download.

1. Open the straton IDE
2. Create a new project
3. Set the communication parameters: Menu Tools > Communication Parameters
4. Set the IP address of the platform and port number. Default port is 502 for windows runtime.
5. Establish the connection with the runtime (): Menu Project > On Line

RESULT IS:
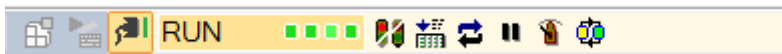
The download is successful and application starts correctly.

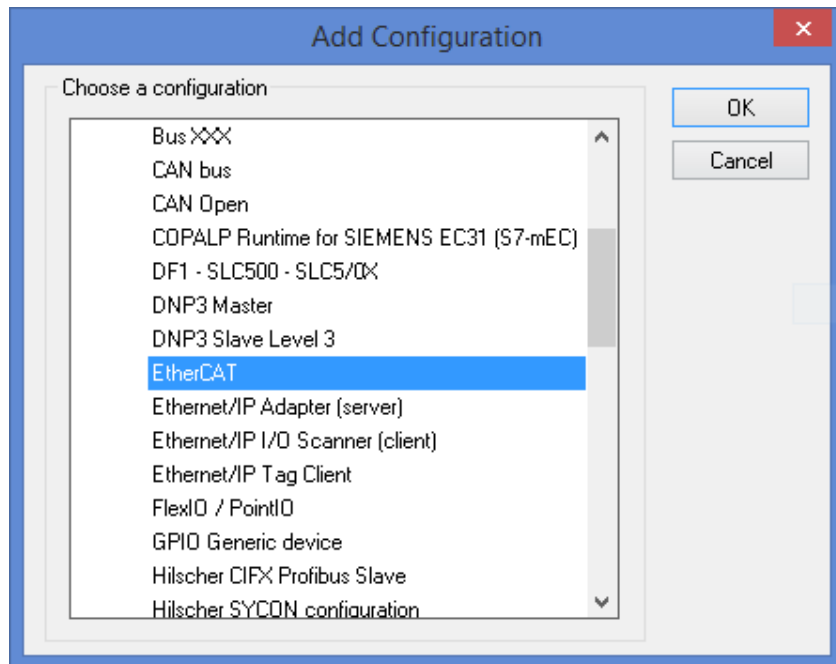The runtime is not started or communication parameters are wrong.

The application is not yet downloaded or an error occurs during startup. More detail can be found in the output view.

2. Create Ethercat configuration

2.1. Create configuration

Open the IO Drivers window (⛒), insert a configuration (⛒) and select the EtherCAT configuration.

The only way of working is to import an eni file. This file can be built by different tools:

▸ "EtherCAT configurator" from Beckhoff Automation

▸ "EC-Engineer" from acontis technologies

▸ "KPA Studio" form Koenig-pa

2.1.1. Creating eni file with EtherCAT configurator

▸ Create your configuration

Here you have a screenshot of one configuration with two couplers EK1100 and two EL1002 and two EL2002 modules.
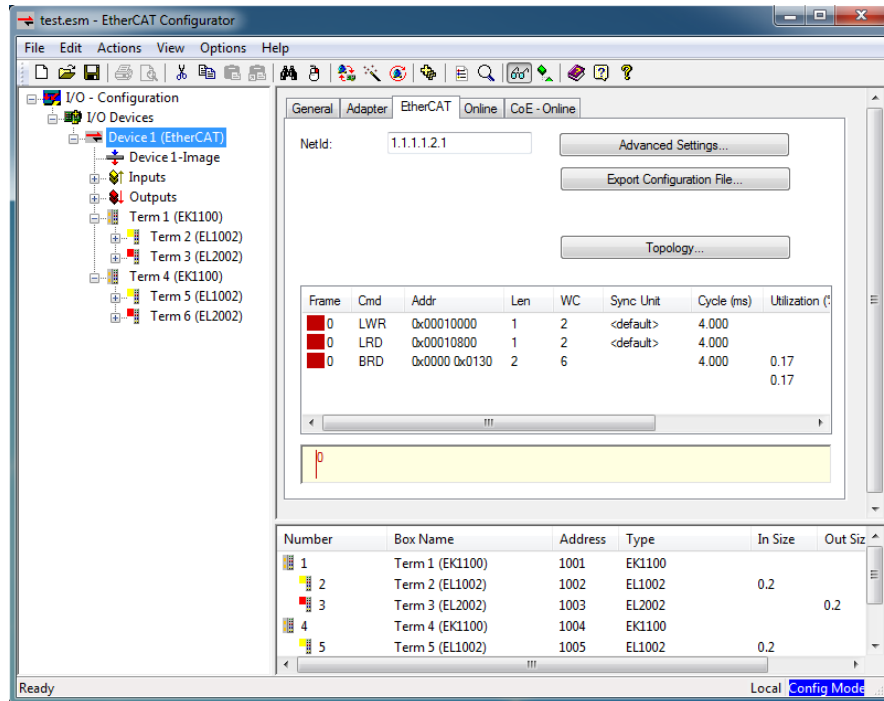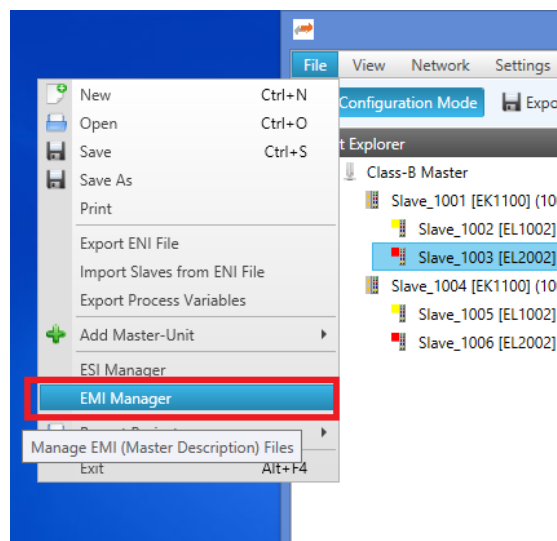

▸ Build the eni file (using "Export Configuration File...").

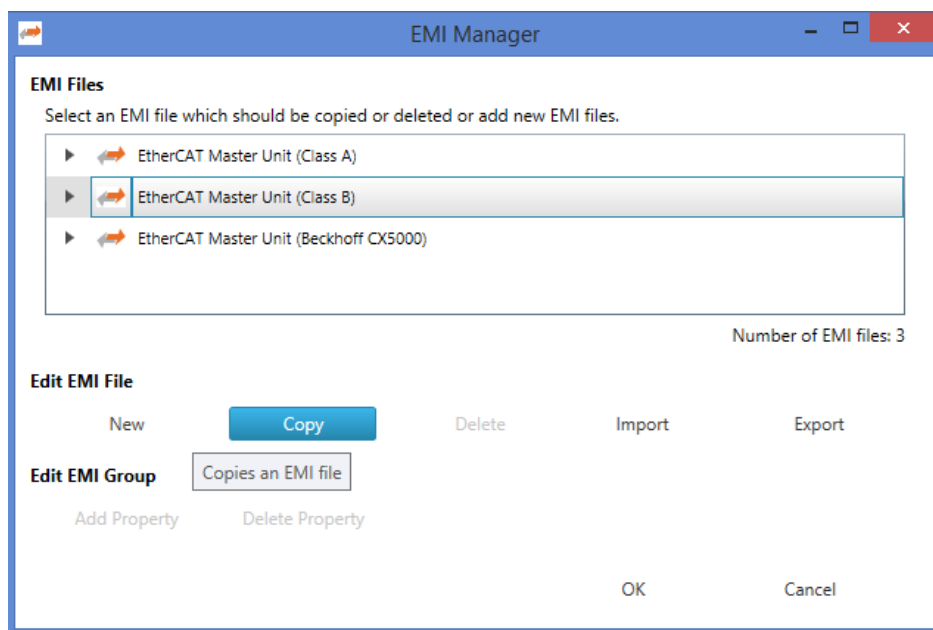## 2.1.2 Creating eni file with EC-Engineer

First of all you have to create a new master template.

▸ Click on menu EMI manager

▸ Copy the Ethercat Master Unit (class B) as a new master unit template

▸ Then change the property "Process Image Layout" from 0 to 1.
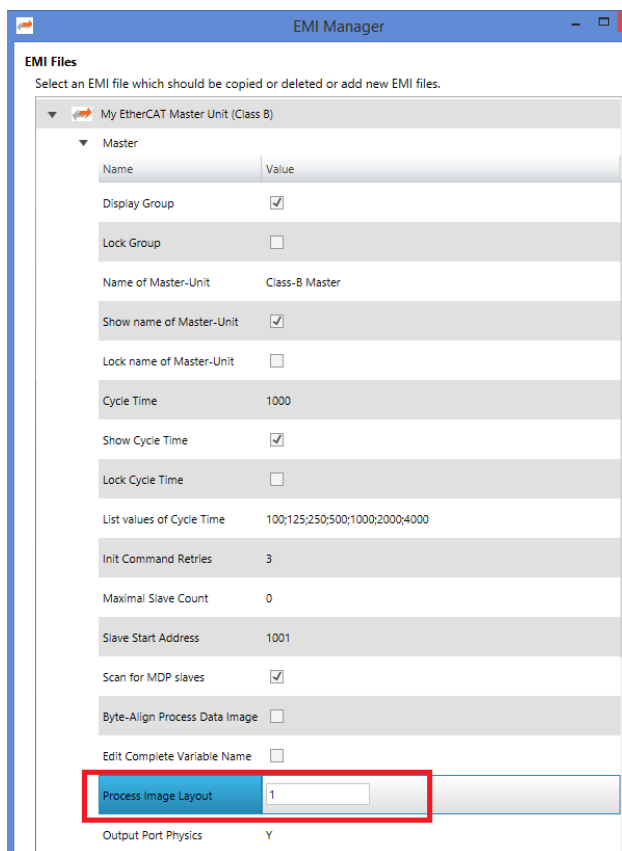
▸ Create your configuration manually or upload it using "Scan EtherCAT Network" feature.

▸ Build eni file (using "Export ENI" command).

2.1.3 Creating eni file with KPA EtherCAT Studio

Launch KPA EtherCAT studio and select your Ethernet device:
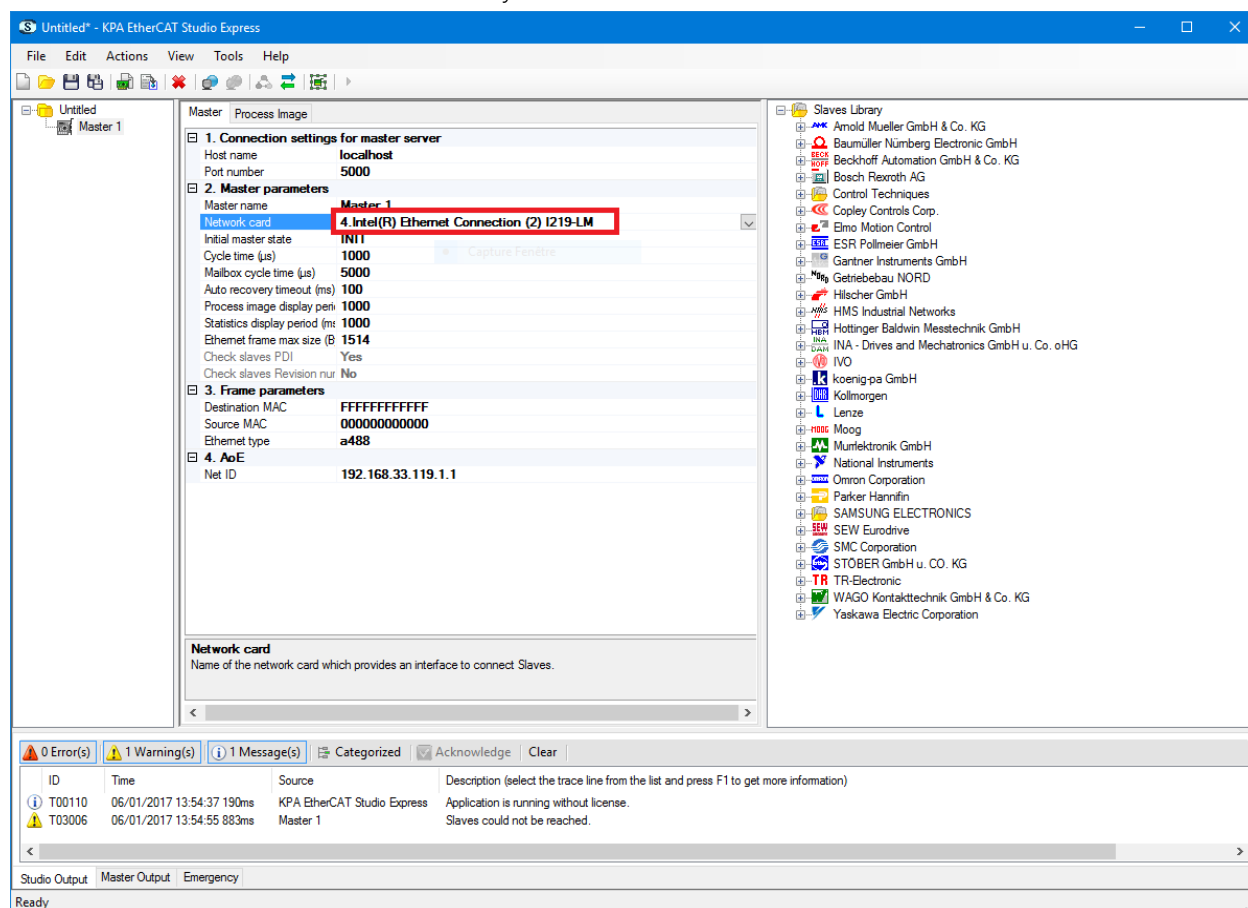
▸ On master node, click on "Scan Configuration" in context menu.

▸ On master node, click on "Export Master Configuration KPA" in context menu.

2.2. Import ENI file in Ethercat straton configurator

Right click on bus node and click on "Import Configuration..." menu item:
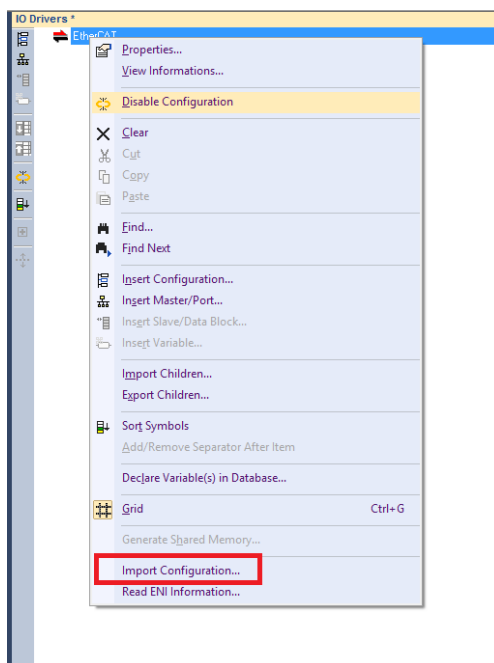
A wizard dialog box appears:

‣ Click on "Load" button and choose the eni file previously created.

‣ The configuration read in file appears on main view

‣ Validate the variable creation check box. If not selected, no variable will be created by import.

▸ Check the "Declare variables in database" if you want that variables should be created in dictionary also.

▸ Choose a prefix for variable names. There are three choices:

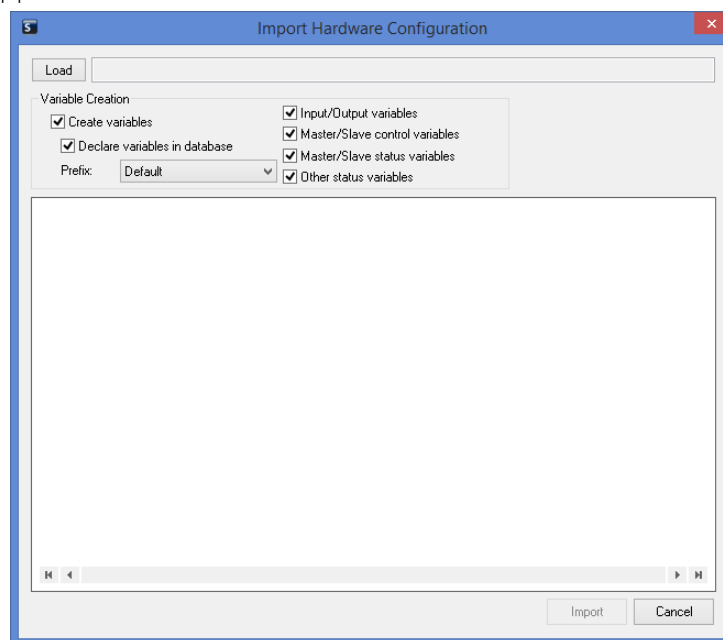- None: the variable will be created with no name

- Default: the variable will be prefixed by slave name and suffix will be taken from the eni file

- Var%%: all variables will have Var01, Var02... names

▸ Choose the type of variables to create:

- Input/Output: all input/and outputs variables found in eni file will be created in configuration

- Master/Slave control: variable for controlling master and slave state machine will be created

- Master/Slave status: var for displaying the current state machine of master and slaves will be created

- Other status: all other variables found in eni file will be also created (ie variables with 0 or more than 12000 bit offset)

▸ When all settings have been set, click on "Import" button to create the configuration:

- - The configuration is set

- - The eni file is copied in current project with "eni.xml" name

- - The copy of "eni.xml" file in target custom folder will be done at each download (important thing: the eni file copied is the file used to configure the Ethercat stack, so don't corrupt this).
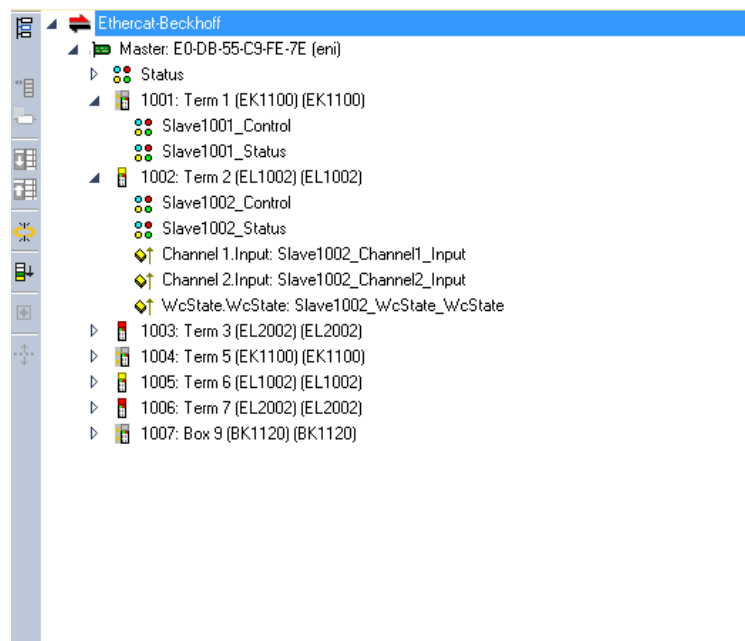
2.3. Changing **device name**

The last thing to do is to configure the master MAC address if not correct (the master MAC address has been read from eni file).

Double click on Master Node in tree:
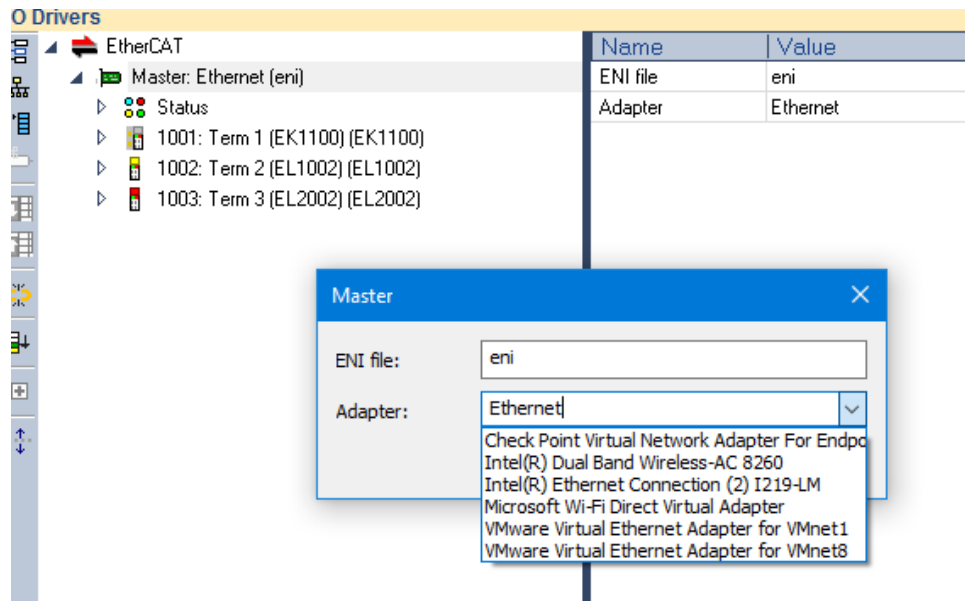
The adapter name property accepts one of these syntaxes:

▸ The full device name (see example above: "Intel(R) Ethernet Connection (2) I219-LM")

▸ A part of the name (example: "Intel(R) Ethernet")

▸ A full mac address (example: "00-50-56-C0-00-01")

▸ The "alias" name found in "Configuration Panel" (example below "Ethernet"):
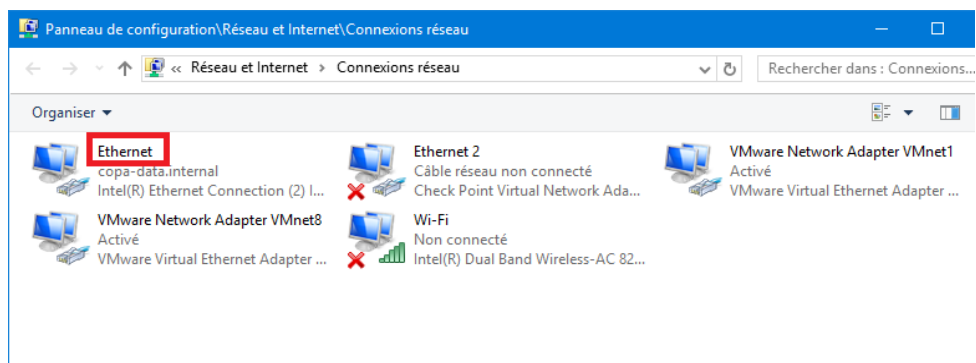
2.4. Reading information from an ENI file

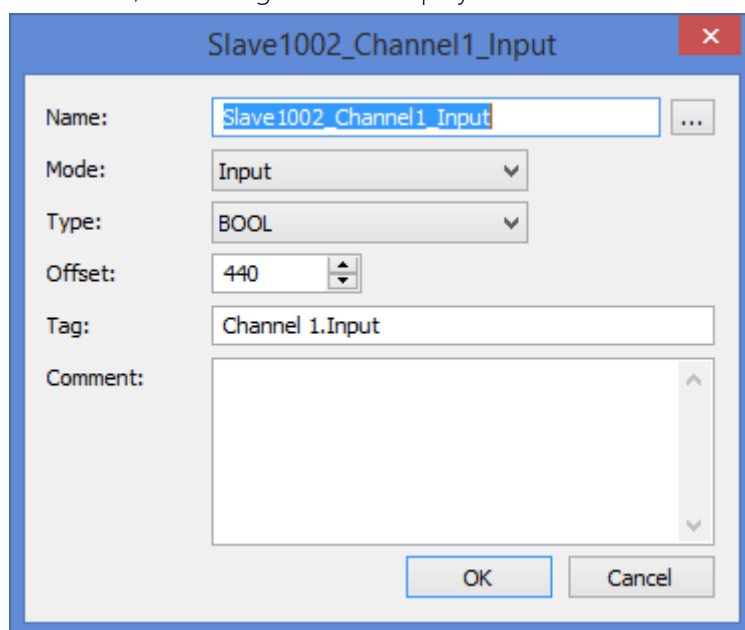To read the content of an eni file, use the command "Read ENI Information…" in contextual menu. This will allow retrieving information (slaves, init commands, cyclic commands…) of the selected ENI file.

NB: this dialog is not used to import ENI configuration. If you want to import ENI configuration, you will have to use "Import Configuration…" menu.

2.5. Variable Dialog

When double click on a variable, the dialog below is displayed:

The tag and comments have been read from eni file and are only information.

3. Frequently Asked Questions

CAN I CHANGE THE SLAVE CONFIGURATION BY MY OWN WAY?

One important thing to understand is this: the configuration is only a representation of the content of the eni file. If you change "*Name*" or "*Art-No*" of the slave, this won't change configuration.

But the "*Physical Address*" is used by status and control variables to set/display the state machine of the current slave. So, changing it will lead you to set/display status of the wrong slave.
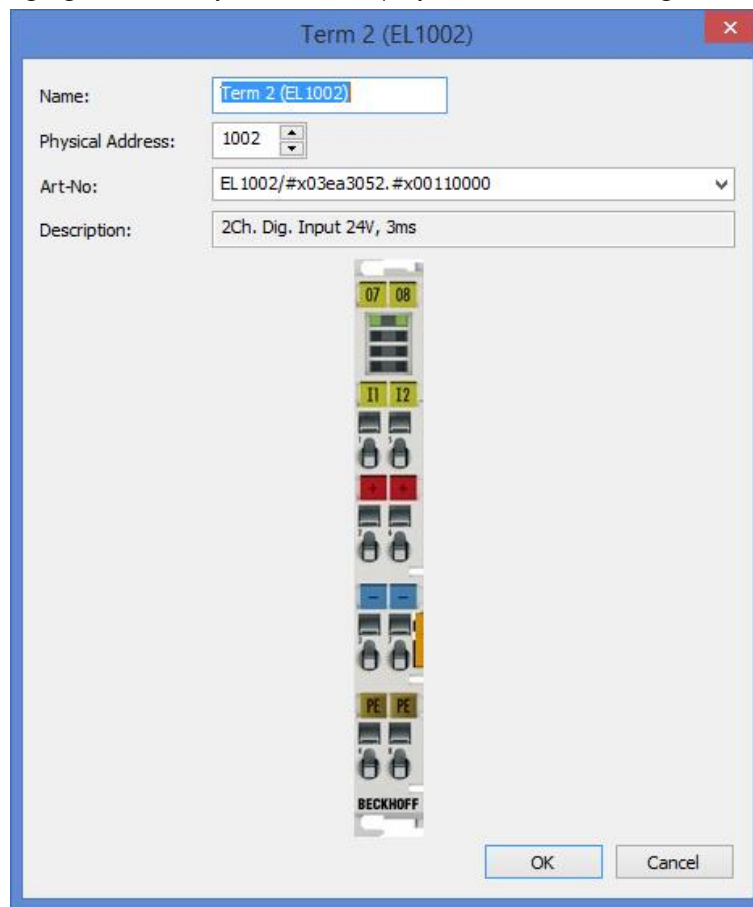
I HAVE THE RUNTIME MESSAGE "FAILED TO OPEN ETHERCAT DEVICE (ERROR = 0X98110700)". WHAT DOES IT MEAN?

Your master MAC address is not correct.

I HAVE THE RUNTIME MESSAGE "CAN NOT LOAD 'ECETHERLIB.DLL'"

This means you are using the driver with Beckhoff stack and you have not installed the Beckhoff configurator. This dll should be installed in your Windows/SysWOW64 folder.

HOW CAN I DISPLAY MORE TRACES?

Use the bus properties. You can chose the trace level displayed in straton output:
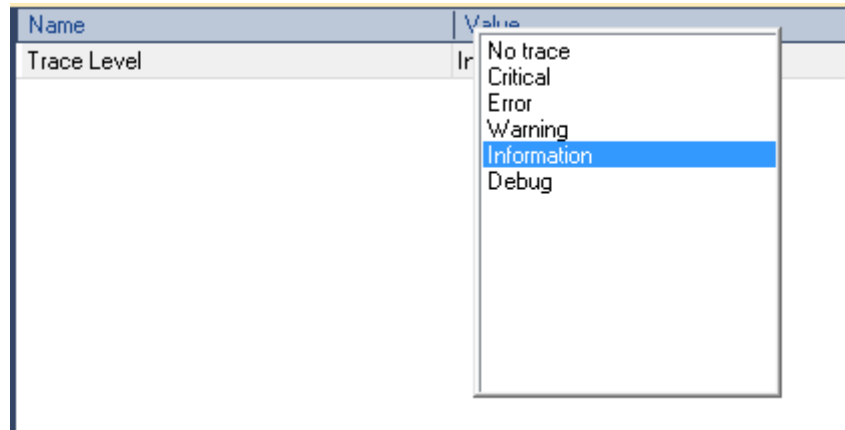
There are different types of trace from "No trace" (no trace) to "Debug" (all traces).

In deployed product, choose Information (all critical, error, warning and information traces will be displayed).

WHAT ARE ALLOWED VALUES FOR "CONTROL MASTER AND SLAVE" VARIABLES?

For slave, values are:

DEVICE_STATE_INIT	1
DEVICE_STATE_PREOP	2
DEVICE_STATE_BOOTSTRAP	3
DEVICE_STATE_SAFEOP	4
DEVICE_STATE_OP	8

For master values are:

DEVICE_STATE_INIT	1
DEVICE_STATE_PREOP	2
DEVICE_STATE_SAFEOP	4
DEVICE_STATE_OP	8

WHAT ARE THE VALUES OF THE "STATUS MASTER AND SLAVE" VARIABLES?

See values below:

DEVICE_STATE_INIT	1
DEVICE_STATE_PREOP	2
DEVICE_STATE_BOOTSTRAP	3
DEVICE_STATE_SAFEOP	4
DEVICE_STATE_OP	8
DEVICE_STATE_ERROR	16

CAN WE GET INFORMATION FROM BUS STATUS?

Only when using target with Koenig-pa stack, you can add "Diagnosis" variables.

Use a DWORD variable. The value retrieved is a set of bits.

See values below:

EcatMasterDiagnosticStateUpdated	0x00000001
EcatMasterDiagnosticStateSendReceiveError	0x00000002
EcatMasterDiagnosticStateParseError	0x00000004
EcatMasterDiagnosticStateLinkDown	0x00000008
EcatMasterDiagnosticStateWrongConfiguration	0x00000010
EcatMasterDiagnosticStateS2STimeout	0x00000020
EcatMasterDiagnosticStateDefaultDataWasSet	0x00000040
EcatMasterDiagnosticStateWatchDogTimeOut	0x00000080
EcatMasterDiagnosticMasterIsLocked	0x00000100
EcatMasterDiagnosticDCInternalSyncEstablished	0x00000200
EcatMasterDiagnosticDCExternalSyncEstablished	0x00000400
EcatMasterDiagnosticDCPropagationDelayInitialized	0x00000800
EcatMasterDiagnosticStateOutputsUpdate	0x00001000